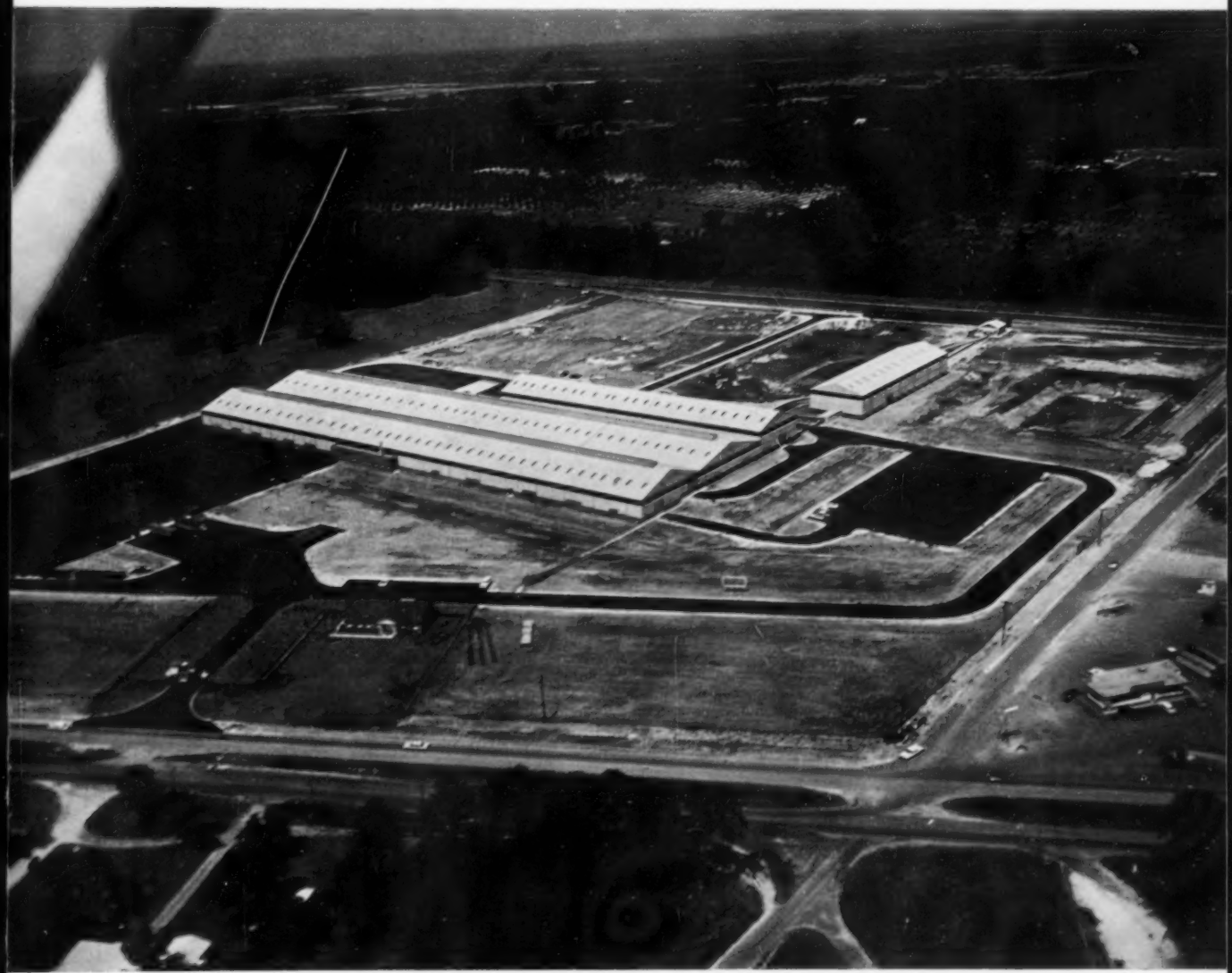
LEADING CLAY JOURNAL OF THE WORLD / A CAHNERS PUBLICATION / JULY, 1961 / 75c

Brick & Clay RECORD



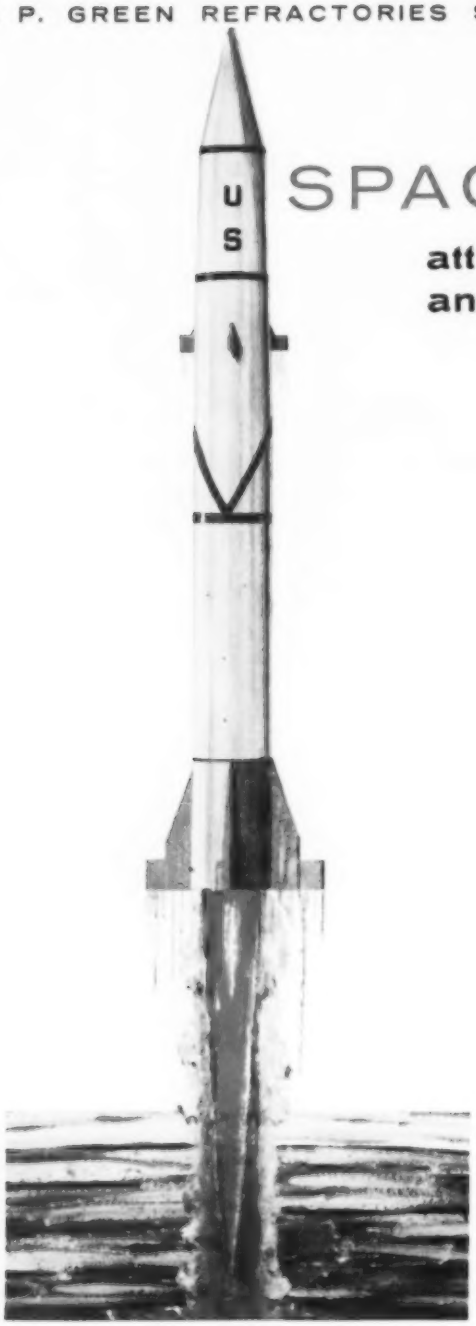
Air View of Florida's First Clay Pipe Plant at Ocala—Pages 5 and 40

Clay Pipe Joins Florida Boom

Customer Service Spurs Firm's Growth

Buy Your Equipment—Or Lease It?

A. P. GREEN REFRACTORIES SERVE THE WORLD'S INDUSTRIES



SPACE...

attained through imagination and refractories

When the original Redstone missile soared aloft at the Cape Canaveral launching site, mankind took a big step toward the reality of interplanetary travel, weather forecasting, and other dreamlike by-products of the space age. A. P. Green Company engineers were associated with the missile program from its early beginning. Their job — to develop heat resistant refractory materials to withstand the extreme temperatures and thrust encountered in the testing of today's missiles. The refractory surfacing of the test launching pads at Cape Canaveral is an A. P. Green development . . . the original pads are still giving excellent service.

This is a photograph of the A. P. Green KS-4 castable refractory used for surfacing the launching pads in the original test. It illustrates the gunned castable refractory panels as installed on the pad foundation. This special refractory was required to withstand the tremendous heat and thrust encountered in the firing of missiles such as the Redstone.

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MANUFACTURERS OF A COMPLETE LINE OF HIGH QUALITY REFRACTORIES INCLUDING: FIRE CLAY, HIGH ALUMINA, SEMI-SILICA, SILICA, MULLITE, SILICON CARBIDE, ZIRCON, AND BASIC PRODUCTS.

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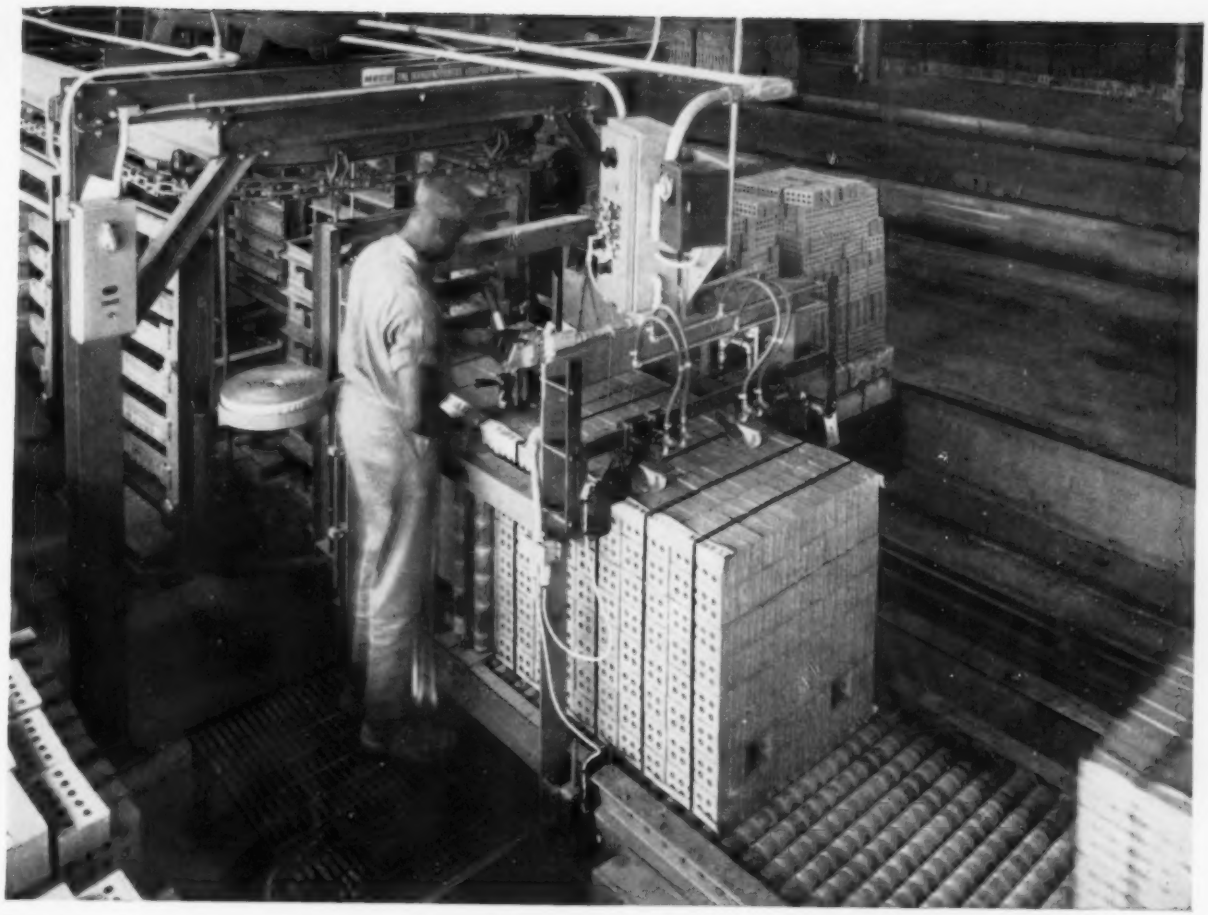

7 men blend, stack, and strap over 100,000 brick per shift

If you produce 60,000 or more brick per day in one plant and want them packaged at least cost, a Signode-MECO machine like this one at Columbia Brick and Tile Co., Columbia, S.C., will be of real interest. It offers many advantages over other volume brick packaging methods:

- the MECO conveyor system is designed to minimize lifting and reaching while the brick are blended and stacked.
- packs of 75 to 125 standard, Norman, or Roman brick are compacted by pneumatic rams to eliminate stacking voids and are then secured in a tight, steel-strapped package by a Signode pneumatic all-power AMP strapping machine used with a Signode power strap feeder.
- continuous paper corner protectors are automatically applied and cut off between multi-packs to speed lift truck handling. Take-off conveyor handles peak production surges without the constant attention of a lift truck driver.

Every Signode installation is custom engineered. Signode field engineering service and brick packaging tools and machines are available to make any production volume fast and efficient, whether you need more or less automation than at Columbia. Your inquiry is invited.

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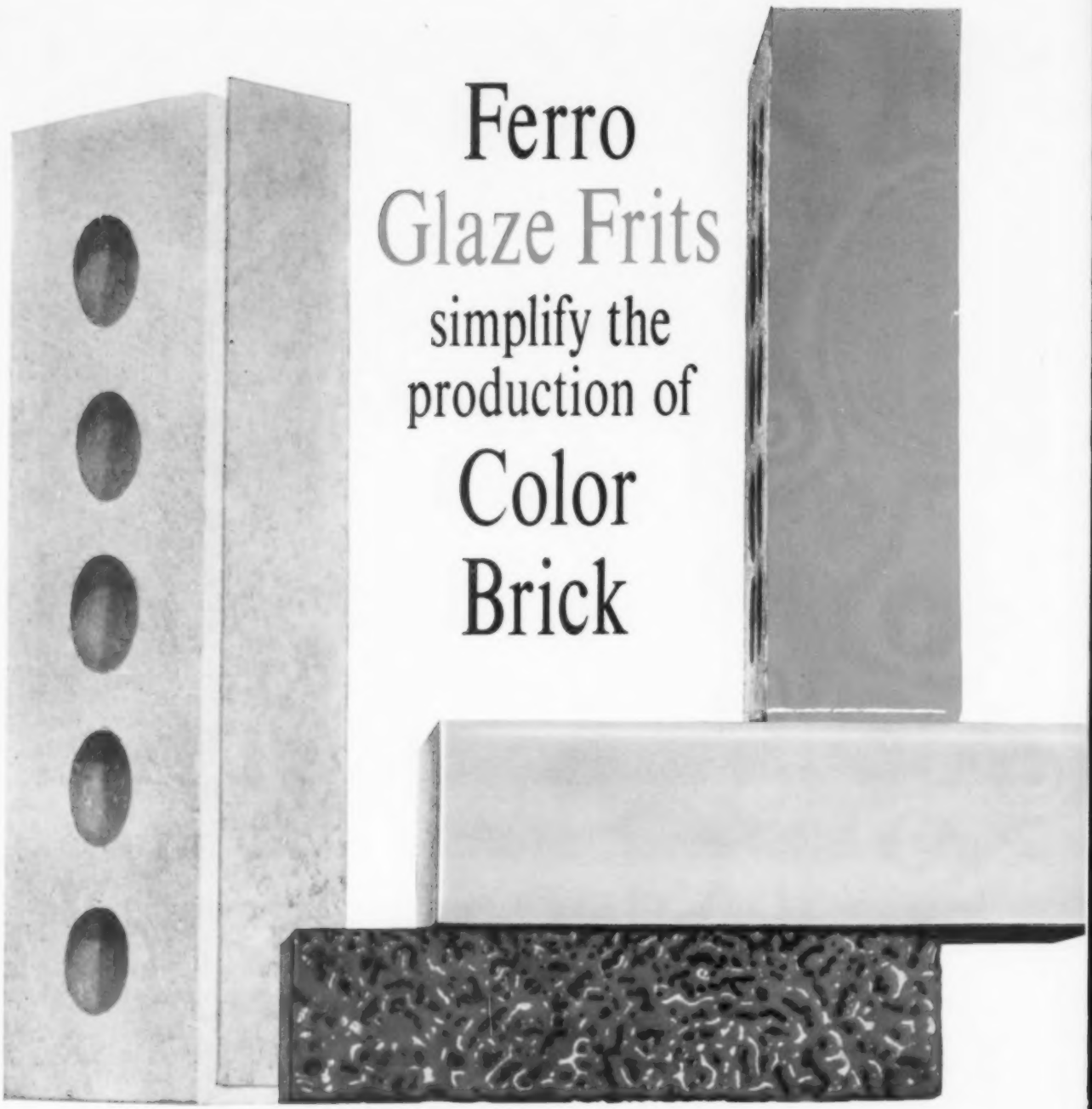

Ferro Glaze Frits simplify the production of Color Brick

Trouble-free production of glazed color brick is highly dependent on the glaze-frits that are used. On their "clear glass" quality, their workability, their consistent uniformity, their *complete compatibility* with the inorganic colorants required to best provide the colors desired. ■ That there is a big difference in glaze-frits, many brick producers have discovered. And they find this difference can mean better production, consistently higher quality, in their brickmaking operations. ■ Ferro produces glaze-frits for all body materials—fire clay, shale, clay grog and lightweight aggregate mixes. They work well in all colors in cleanable matte or high gloss finishes. You'll find them *entirely predictable*. Sound good? We invite you to *try* them.

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Cleveland 5, Ohio . . . Nashville 11, Tennessee . . . Los Angeles 22, California . . . *IN CANADA: Ferro Enamels Ltd., Oakville, Ontario*

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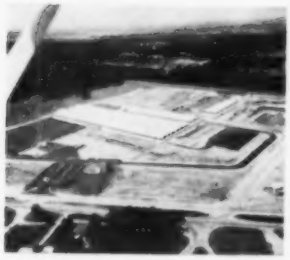

The magazine of brick, drain tile, structural tile, clay aggregate, terra cotta, roofing tile, refractories, clay pipe, and abrasives.

J. J. Svec
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THIS MONTH'S COVER

A striking air view of the new plant of United States Concrete Pipe Co. on a 40-acre site about two miles south of Ocala, Fla. This $3,000,000 plant is the 12th manufacturing location of the pipe company and supplies clay pipe to the booming Florida market. Read the full story of one of Florida's newest industries beginning on page 40.

A CAHNERS PUBLICATION

Brick & Clay RECORD

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44 Customer Service Spurs Growth of Rockford Brick & Tile
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Leading Clay Journal of The World
Established 1892; Now in 69th Year

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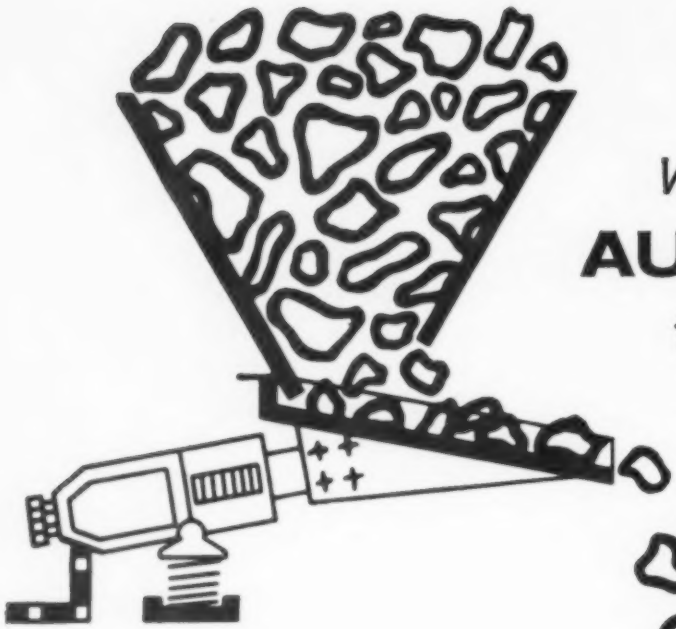

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AUTOMATION...

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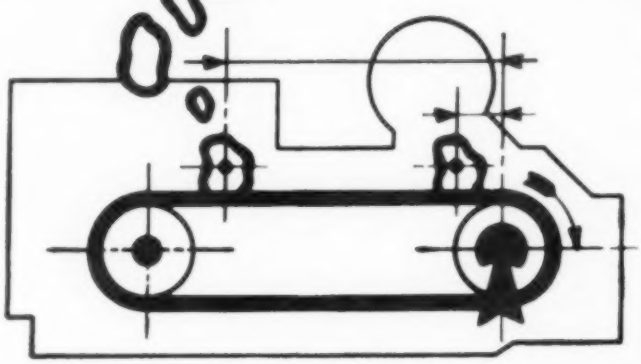

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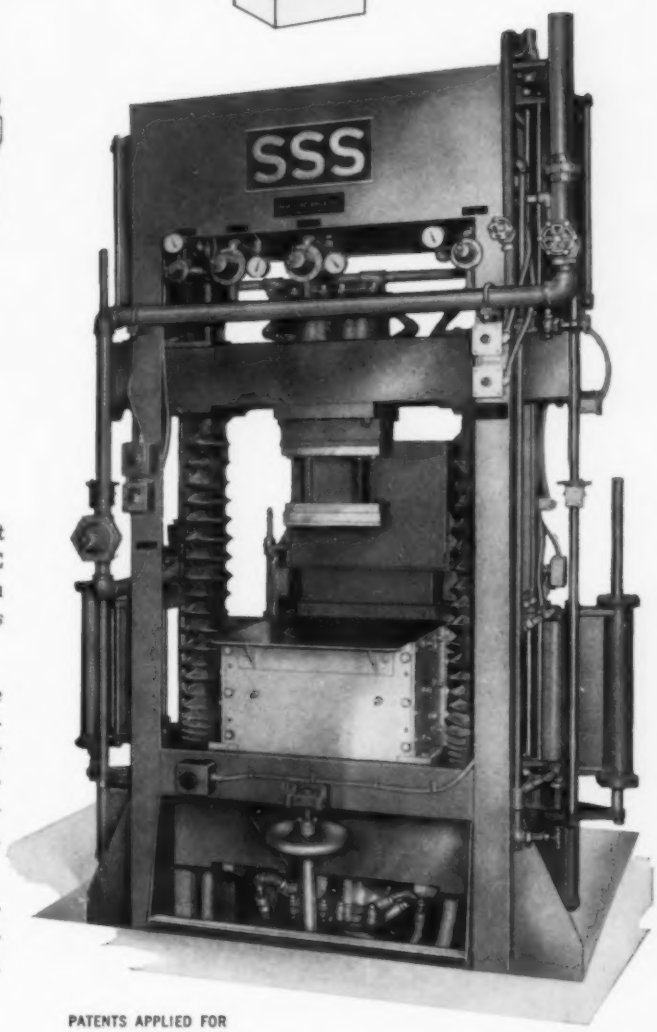

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Lower equipment cost...lower installation cost ...lower operating cost! You get ALL THREE with the new SUPERIOR Impact Press. And you can make *larger, thicker, more intricate shapes* with most any refractory material!

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EASILY MOVED . . . no foundation forms needed, installation is simple

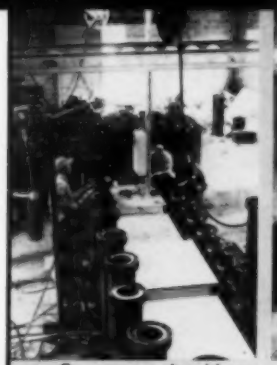
Gives better quality joints

Increases production — cuts rejects

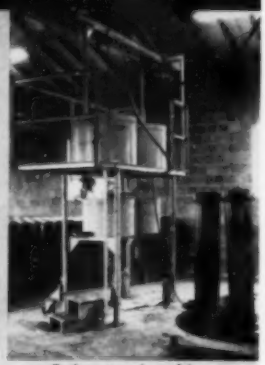
Saves manpower — easy to operate

STAR designs and manufactures a completely integrated system, adjustable to your specific needs, consisting of bridge crane, hoists, pipe clamps, conveyor unit (hydraulic indexing or mechanical continuous, with or without rotating pallets), Molds, Polyester batching systems (mixing tanks, proportioning pumps, mixing and pouring head or gun).

Write or Phone for details TODAY!

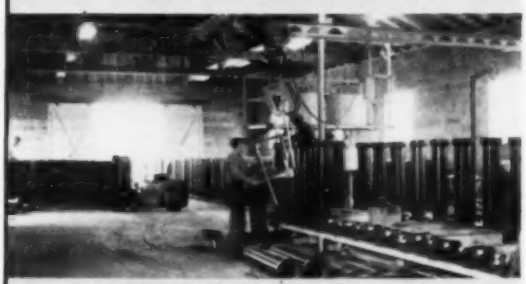


Conveyor unit with bridge crane and hoist



Polyester batching system

Mixing and pouring station



Unloading finished work at finish station

STAR Foundry and Machine Co., Inc.
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Actual photos of a recent STAR complete installation, at LEE CLAY PRODUCTS CO., CLEARFIELD, KENTUCKY.

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ANOTHER "VETERAN" PACKAGER JOINS THE RANKS!

Acme Idea Man Bill Allen watches Idea No. S3-72 cut costs at Robinson Brick & Tile Company, Denver, Colo.

This Link-Belt/Acme Steel brick packaging machine has been cutting costs, keeping packaging production abreast of demand at Robinson Brick & Tile Company for nearly two years. It's a proven veteran, joining the ranks of other seasoned Link-Belt/Acme Steel installations—some which have been operating day-in, day-out for nearly three years!

Ejecting a perfectly strapped, 100-brick pack every 22 seconds, the machine can handle up to 130,000 brick daily—all 65 kinds of "ROBCO" standard, Norman and Roman sizes. As a result, Robinson eliminates Saturday work... plans production so weekly output is packaged in 5 days!

Clip the coupon for full facts. We have also prepared a color film of the Link-Belt/Acme Steel brick packaging machine. For viewing arrangements, write us on your letterhead.

ACME STEEL IDEA LEADER IN **STRAPPING**

ACME STEEL COMPANY
Acme Steel Products Division
Dept. BCS-71
135th St. & Perry Ave.
Chicago 27, Ill.

Please send me Idea No. S3-72 and examples of how other major brick producers are using Acme Steel Strapping.

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*Firm*_____

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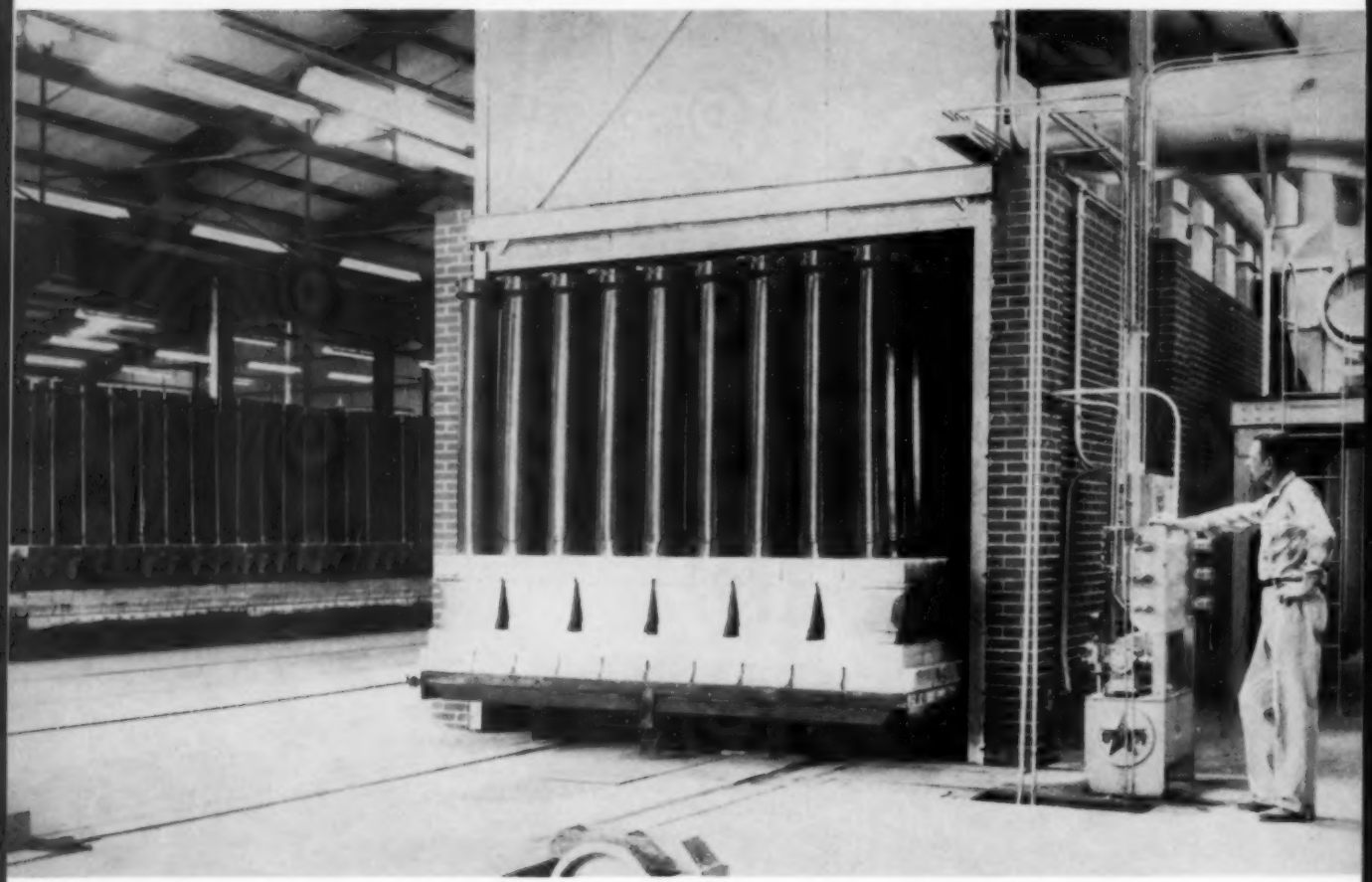
Circle Service No. 7

at the new Southern plant of

UNIVERSAL SEWER PIPE CORPORATION



This large DRESSLER KILN
for salt-glazed sewer pipe

Universal's new Ocala, Florida plant for sewer pipe production features a Dressler Tunnel Kiln and Preheater with rated capacity of 100 tons per day. Equipped with the patented Dressler "Brineglaze" system for salt glazing, the Kiln is 465′ long with cars 10′6″ wide to accommodate 5′ lengths of pipe. Natural gas is employed for firing the Kiln. • May we quote on your kiln requirements?

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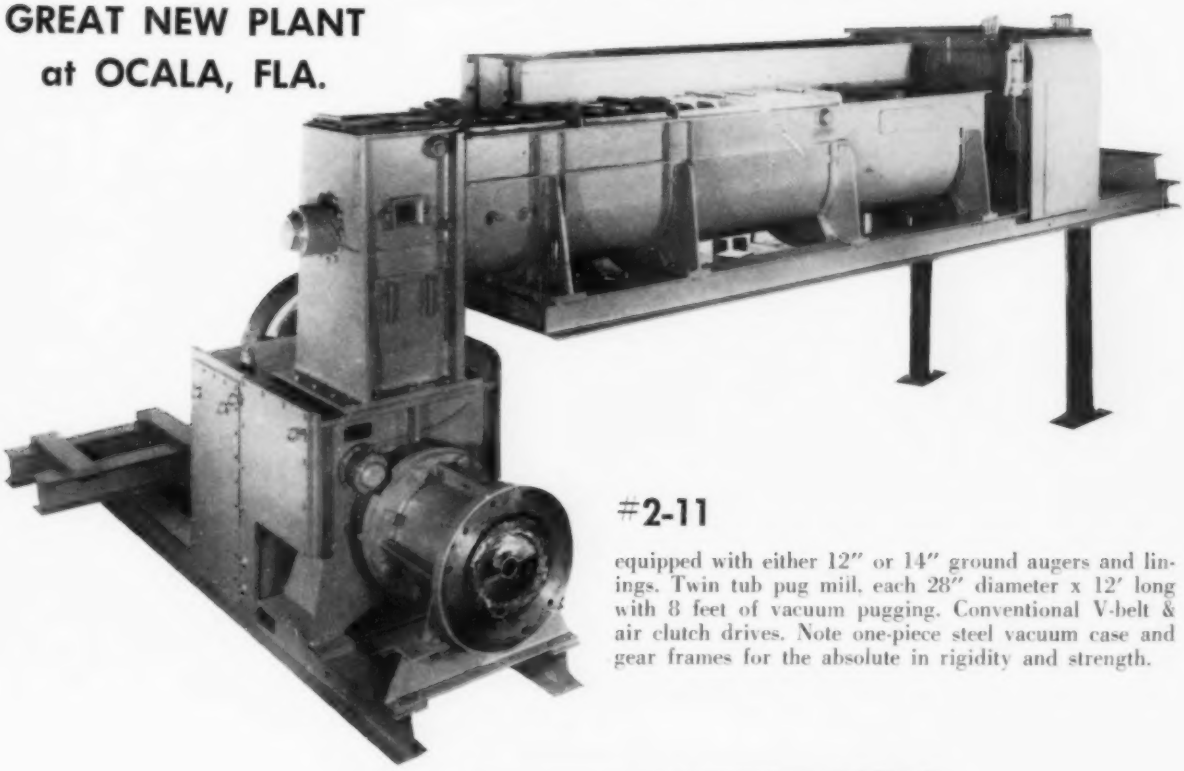
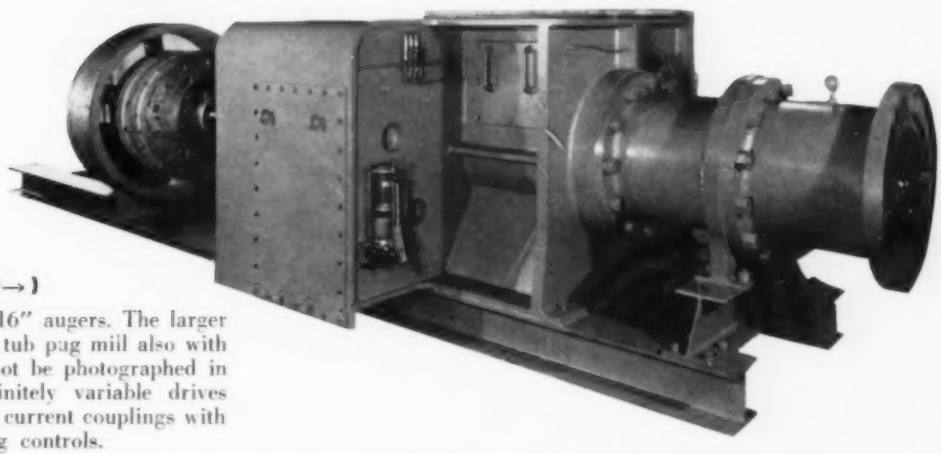
A VITAL PART OF UNITED STATES CONCRETE PIPE CO.'s
GREAT NEW PLANT at OCALA, FLA.



#2-11

equipped with either 12" or 14" ground augers and linings. Twin tub pug mill, each 28" diameter x 12' long with 8 feet of vacuum pugging. Conventional V-belt & air clutch drives. Note one-piece steel vacuum case and gear frames for the absolute in rigidity and strength.



#2-12

(Lower Extruder Unit→)

for either fitted 14" or 16" augers. The larger 34" diameter x 12' twin tub pug mill also with vacuum pugging could not be photographed in place in our shop. Infinitely variable drives through Louis Allis eddy current couplings with automatic torque limiting controls.

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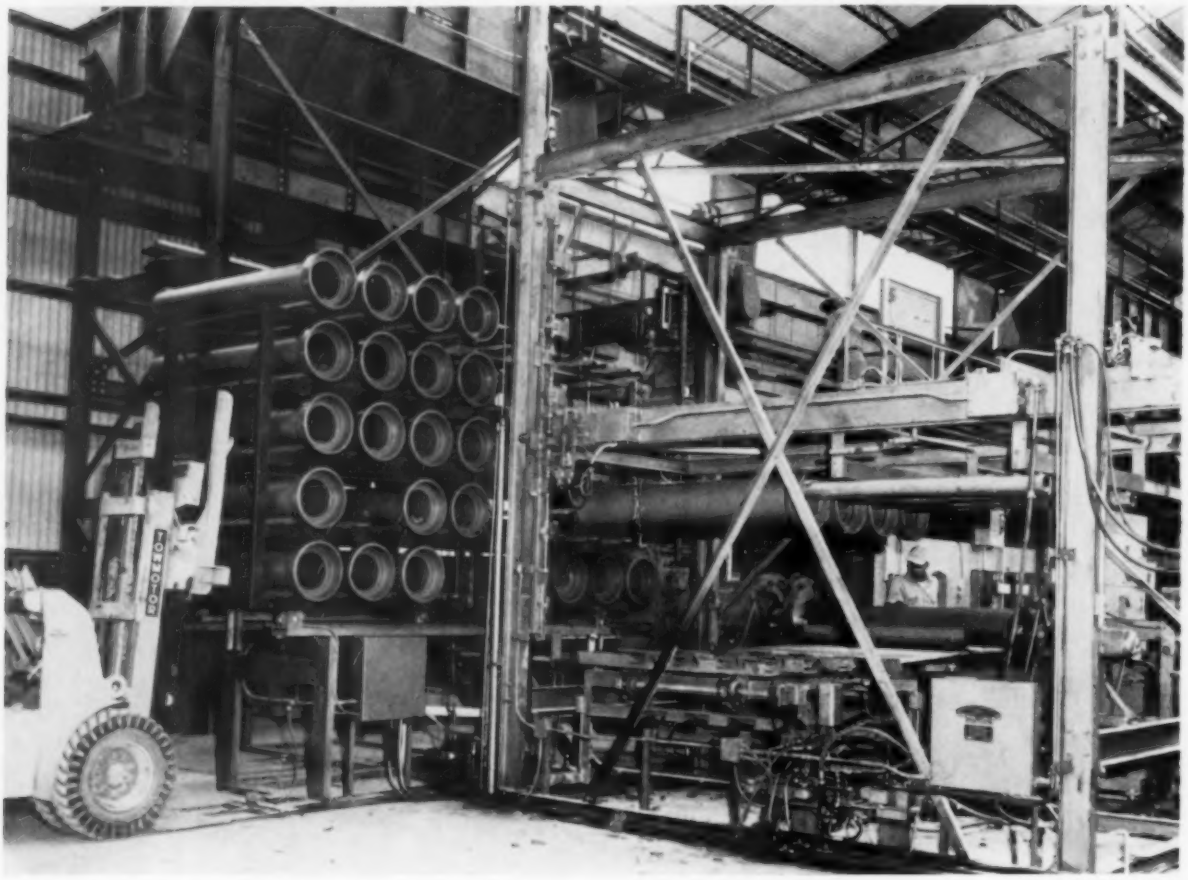
Pearne and Lacy
AUTOMATIC RACK LOADER



(Patent Applied For)

The automatic sequence of operations provide for a continuing flow of pipe from the finishing station to the racks.
Pipe rolls direct from the finishing station to the indexer where it is picked up and inserted into the rack tray. Racks are automatically positioned for pick-up by the trucker. No interruptions in the operation waiting for the trucker. The complete loading operation is automatic except for the trucking. Rack loader is adaptable for all size of pipe handled horizontally. Specially designed light weight racks and trays are also available.

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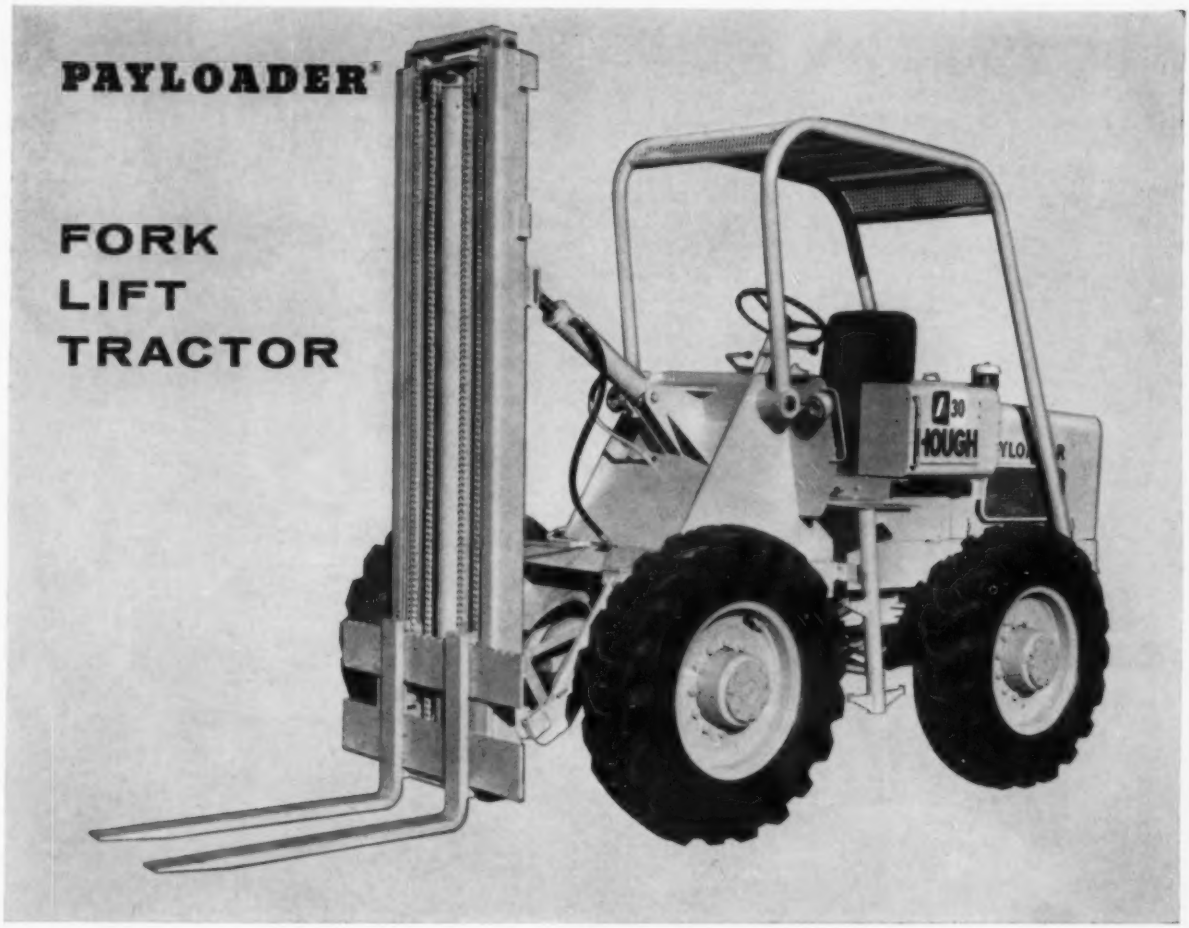

4-wheel drive unit has 6,000-lb. capacity

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Your Hough Distributor is ready to show you what this Fork Lift Tractor can do — also the many sizes of "PAYLOADER" tractor-shovels — to improve materials-moving efficiency. Ask for a demonstration.

6-B-7

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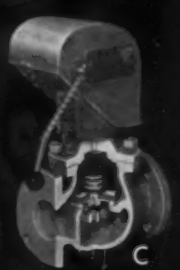

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Sizes in inches
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Cleveland 5, Ohio

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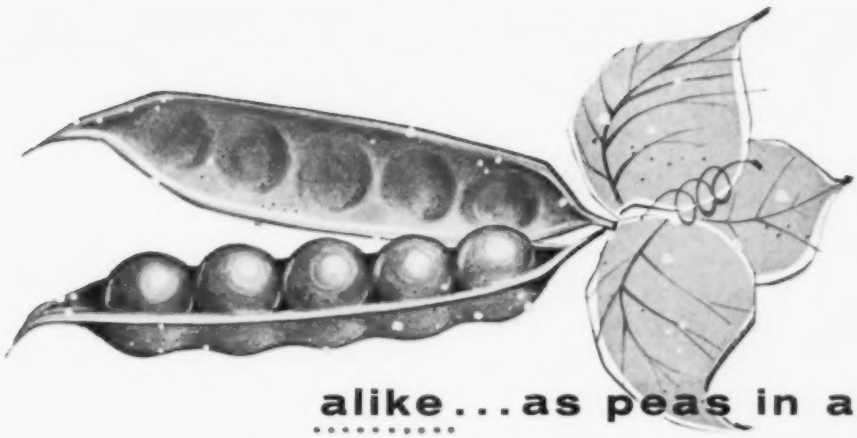
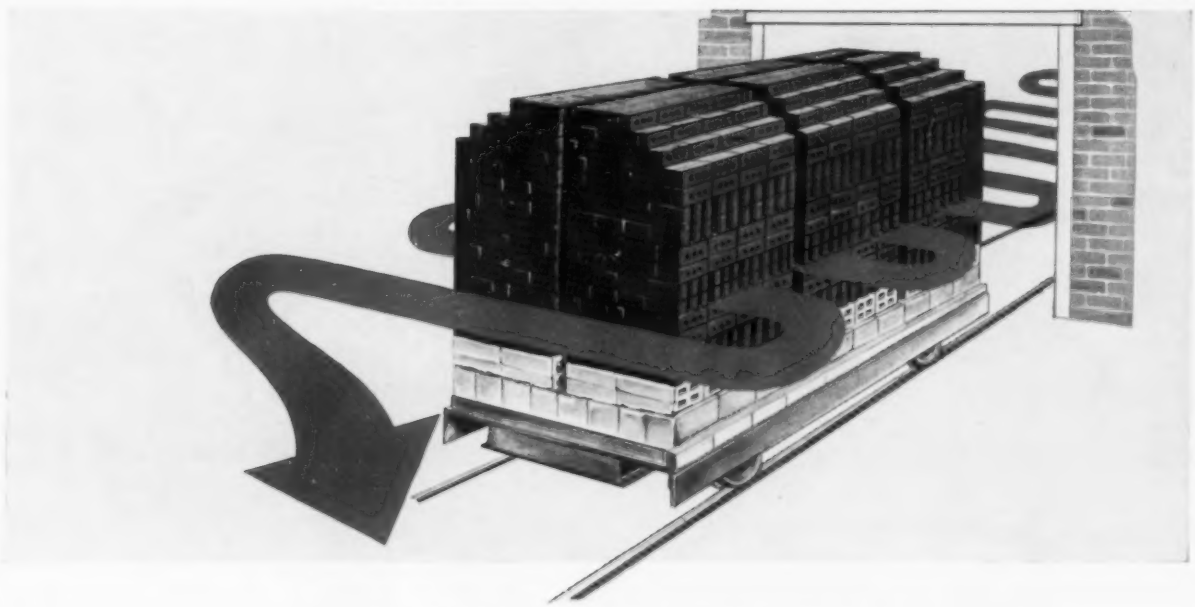


alike...as peas in a pod!



Miller Cros-Flo Tunnel Kilns Produce "Uniform," First Quality Ware

Miller proven Cros-Flo principles solve the problem of uniform, select brick production. Scientifically placed fans and baffles force air and gases uniformly throughout setting.

Miller Cros-Flo Kiln operators report excellent production results . . . uniform first quality ware . . . day after day.

Miller Cros-Flo Tunnel Kilns use all usable heat in a continuous drying, firing and cooling operation . . . unbelievably low fuel cost per 1000 brick.

LOOK TO MILLER FOR THE FINEST

- Kiln Cars
- Hammermill Crushers
- Hydraulic Equipment
- Calcining Furnaces
- Plant Design
- Engineering Services

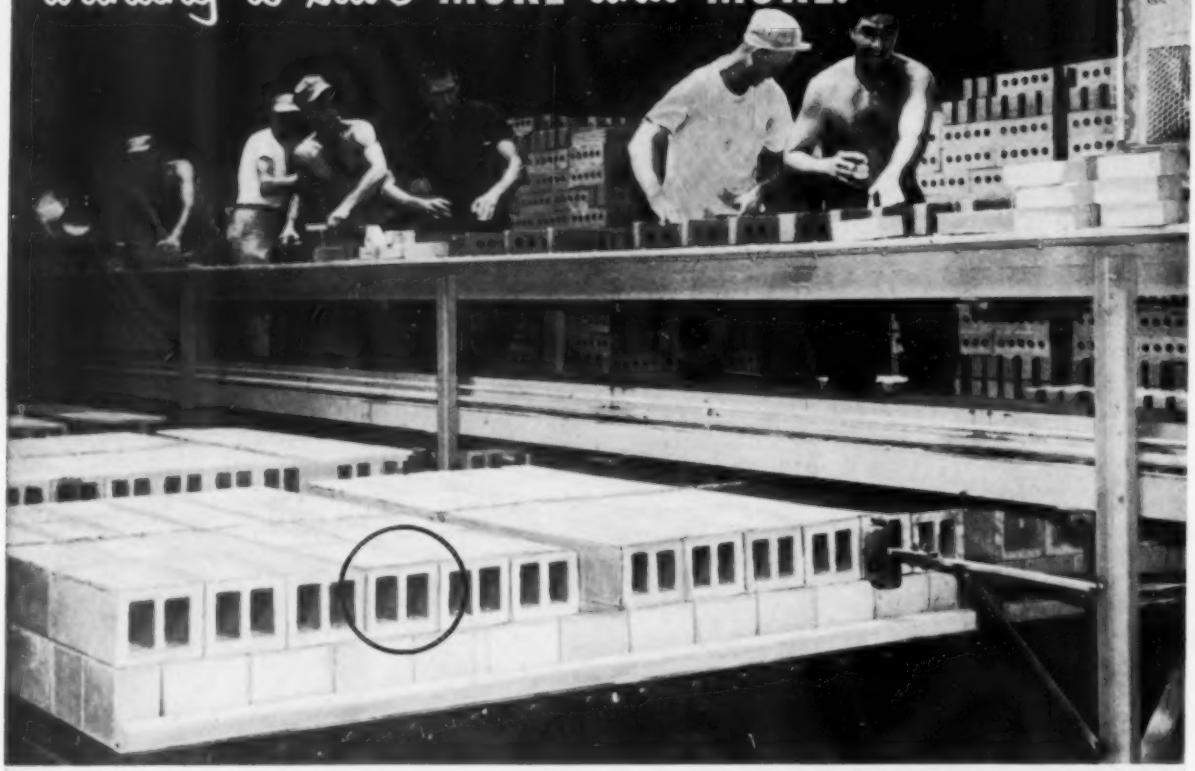
Miller Equipment Company

P. O. Box 1566 • Phone ME 3-3541 • Salisbury, N. C.

Pacific Agent:
WALTER C. STOLL & SONS
5028 Alhambra Avenue
Los Angeles 32, California

Circle Service No. 5

Accepted MORE and MORE by plants wanting to save MORE and MORE!



PHOTO—Cloud Ceramics No. 2 Plant, Concordia, Kansas. This modern plant uses 7" x 8½" x 19½" PACO car tops on top deck; 4½" x 8½" x 8¼" PACO car tops, with light weight insulation, for perimeter.

PACO CAR TOPS

More and more tunnel kiln brick producers are finding they can reduce car top replacement costs as much as 50% with PACO! And, here's why PACO car tops last longer. They are made from the mineral pyrophyllite, a superior raw material. The result is a stronger, lighter weight car top that is highly resistant to thermal shock. PACO car tops do not have a softening point below actual fusing point, providing greater resistance to hot load deformation. The result is better, more efficient production. They are easy to handle and install, and simple to replace individually as needs.

There is a PACO engineer as close as your telephone — or write for complete information!

SEE OUR CATALOG IN Ceramic data book

NORTH STATE PYROPHYLLITE COMPANY, INC.

Telephone CYpress 9-1441 Greensboro, North Carolina

OTHER PACO PRODUCTS INCLUDE: • PACO PLASTIC • PACOCAST • PACO H.T. CEMENTS • PACO FIRE BRICK MORTAR • PACO SIDE CAR BRICK • PACO FIRE BRICK • PACO LADLE LINING • PACO HEATZONE COMPOUND

Circle Service No. 14

In the Brick Handling League Bickerstaff is a Real 'Pro'!

Ever watch a "slick-fielding" shortstop in action - or a "pass-tossing" quarterback hit an end for a touchdown? Both require smooth handling ability. Brick-handling requires essentially the same smoothness - and *a Bickerstaff Fork provides it* - package after package. In and out of the kiln. In and out of inventory. On to truck or freight car. Get a real "pro" - get a Bickerstaff Fork for the "smoothest" brick handling you have ever seen. Immediately, your score in the profit column will go up, up!

M M HIGH PERFORMANCE - MINIMUM MAINTENANCE

A call, wire or letter will bring you the full story on Bickerstaff Forks . . . with M - M Representatives throughout the U. S. and Canada.

West Coast Representative - WALTER C. STOLL & SONS
5028 ALHAMBRA AVE. - LOS ANGELES, CALIFORNIA

BICKERSTAFF, Inc. - P. O. Box 1178 - Columbus, Georgia - CY 8-0455

ENGINEERED FORK LIFT TRUCK ATTACHMENTS

Circle Service No. 15

NEWS from Dow Corning

"Next time–Silaneal!"

Low-cost treatment preserves brick beauty; keeps customers satisfied

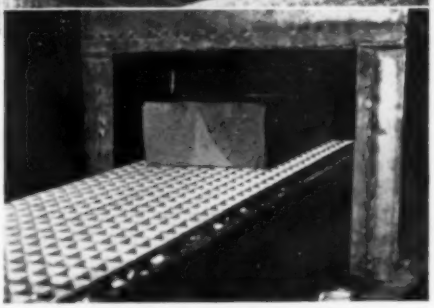
This brick was beautiful when it left the brick plant. But weather and water teamed up to mar it with ugly efflorescence. Yet the brick could have been easily and economically protected with Silaneal®, the plant-applied sodium siliconate treatment that keeps brick clean.

Silaneal makes brick water repellent, turns back surface soil; reduces leaching of salts that cause efflorescence. Equally important, Silaneal controls the suction rate of brick resulting in the elimination of hairline cracks at the brick-mortar interface. Result: stronger, more water resistant walls . . . walls that look better, longer.

Architects prefer Silaneal treated brick because they want the light colored bricks which they now specify to remain free of vanadium and other unsightly efflorescence. Spraying the exposed surfaces of these brick with the proper Silaneal treatment has proved to be an effective way to minimize customer complaints.

Contractors prefer Silaneal treated brick because walls go up faster. Brick need no wetting before lay-up. And clean-up seldom requires more than just simple brushing.

Owners prefer Silaneal treated brick because brick stay clean as new. Maintenance is easier. Dirt rain-washes away. Improved mortar joints



repel rain. Costly tuck pointing a few years after job completion is unnecessary.

And Silaneal saves *you* money — in reduced dirt pickup in storage, fewer customer complaints. Arrange for a showing of "Better Brick Buildings", a 14-minute color film showing the low cost brick plant application of Silaneal. Plans for the inexpensive spray equipment shown are available. Also get the details about the sales aids that help you sell more brick, sell better brick. Write Dow Corning Corporation, Midland, Michigan.

SILANEAL®
keeps brick clean

Dow Corning CORPORATION
MIDLAND, MICHIGAN

Circle Service No. 16

MATERIALS & EQUIPMENT IN THE NEWS

Announce Colloidal Alumina Binder

Company announces new material of the following chemical composition:

AlOOH	83.1%
CH_3OOH	9.8
H_2O	5.2
SO_4	1.7
Trace elements	0.2

Termed "Baymal" by its developers, the material is a white, free flowing powder consisting of clusters of minute fibrils of boehmite (AlOOH) alumina. Some of its interesting properties are:

1. Water dispersable, it swells to form a stable colloid.

2. When a colloidal dispersion of its fibrillar particles is dried on a surface, the small fibrils lie flat and interlace to form a film. Few other inorganics and no other aluminas form films in this manner. Such films remain stable at high temperatures.

3. Particles of "Baymal" are extremely small. Particle size is not given but specific surface area is reported to be 274 square meters/gram.

4. The particles are positively charged in water dispersions allowing the particles to attach themselves to negative surfaces such as glass and clay, changing their surface charges from negative to positive.

5. The colloidal alumina is hydrophilic and organophilic and being wet by both water and certain organic liquids it can act as emulsifier, thickener, dispersing and suspending agent in water and water-alcohol systems.

Indicated uses for the new product are:

1. Component of plastic ceramic extrusions.

2. Thickener and suspending agent in slips and glazes.

3. Inorganic binder for increased green and ultimate fired strengths.

4. High purity, high strength molded alumina bodies.

5. Binder with other ceramic materials in coatings and cements.

6. Froth stabilizer and binder in light-weight ceramic foams.

7. Binder and strengthener for high temperature fiber insulations.

8. Surface coatings for glass fibers.

9. In glass as a binder for solid lubricants.

10. As a mordant for other agents to modify glass fiber surface characteristics.

11. Components of metal coatings which conduct or insulate electricity, act as thermal barriers and as lubricants. *Industrial Department, E. I. Du Pont de Nemours & Co.*

Circle Service No. 90

Jib Boom

Mounted on a 16 to 28 foot telescoping boom, this new 12 foot adjustable jib boom provides a 47 foot hook height (when in the straight-up position), and a horizontal reach to 40 feet. It is claimed to have a lifting capacity of 1000 lbs. in the nearly vertical position and handle 400 lbs. when 40 feet flat out.

The adjustable jib can be quickly locked in any of four positions. *Teale and Co.*

Circle Service No. 89

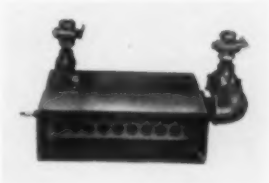
Masonry Saw

The cutting head on this new saw is moved up and down within a 10 inch range at the turn of a crank. The manufacturer claims that this saw enables faster and easier head height adjustment than any other saw.

Available with a 1½, 2, or 3 horsepower, fan cooled electric motor, the saw comes with a 14 or 20 inch capacity blade guard. *Champion Mfg. Co.*

Circle Service No. 88

Tube Burners



Air tube atmospheric-type burners can be provided to withstand temperatures up to 900°F. Capacities, based on 100°F air moving past the burner, range from 70,000 to 1,350,000 BTU/hr.

Air tube burners are said to operate equally well on the suction or pressure side of heater fans or blowers. *Eclipse Fuel Engineering Co.*

Circle Service No. 87

Pressure Instruments

A pressure indicator and an indicator and high pressure alarm both use a transducer of the flush diaphragm type. Other electrical instruments required tedious calibration to the transducer. These new instruments, it is claimed have a new "push botton calibration" which is used for both the original installation and to adjust for transducer drift caused by temperature. *West Instrument Corp.*

Circle Service No. 86

Curve Follower

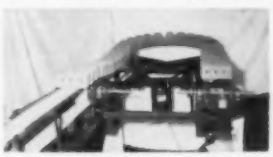
Data-Trak Function Generator converts manual set-point control to automatic program control. Just add a pencil-drawn program curve and connect three wires from the Data-Trak output potentiometer to your present circuits. As the instrument stylus follows your program it turns a control potentiometer.

As many as four 3-gang potentiometers may be driven by the same follower mechanism to provide up to 12 separate synchronized control signals. *Research, Inc.*

Circle Service No. 85

Circle-Veyor

A new conveyor designed to carry green or burnt brick in any direction, around as many turns as necessary at speeds to match the highest production rates, without chipping or dam-



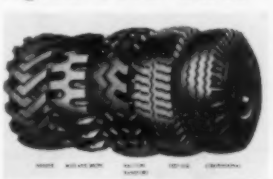
aging the brick, is a product of the engineers of Pelm Research & Development Co.

This firm specializes in solving material handling, plant layout, tunnel kiln and production problems for the clay products industries. The Circle-Veyor was developed to solve a specific customer need, but was found to have wide industry application.

The firm is available for consulting engineering and development work in the brick, lightweight block and clay aggregate fields. *Pelm Research & Development Corp.*

Circle Service No. 84

Nylon Cord Tires



A new line of heavy duty nylon cord tires has two nylon cord shock plys in addition to their normal 6 to 12 ply ratings. Available in either traction or highway treads the tires carry a standard tread of full size and depth. *Harmo Tire & Rubber Co.*

Circle Service No. 83

Tractor

A new low-profile, pneumatic-tired tractor with 6,000 or 8,000 lbs. drawbar pull for underground mining haulage has

overall dimensions of 12' 1" long; 5' 5" wide and only 3' high. The power train features a 6-cylinder, flat diesel engine, torque-converter and automatic transmission with 3 forward and 1 reverse ratios. *Frank G. Hough Co.*

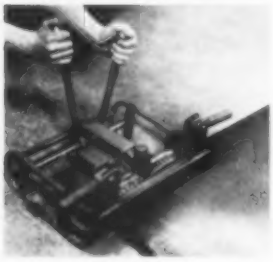
Circle Service No. 81

Balanced Rolls

This firm manufacturers automatically adjustable rolls in sizes ranging from 8" x 5" to 36" x 20", with crushing capacities of up to 87 tons an hour. The company also manufactures a complete line of other crushing, milling and fine-grinding machines as well as blenders, mixers, air classifiers and other dry processing equipment. *Sturtevant Mill Co.*

Circle Service No. 80

Conveyor Splicer



This zipper is a new type of portable, one man splice maker for conveyor belts. Adaptable to all belt thicknesses, widths, and types, the zipper is a fully portable, lightweight unit which can be used with ease in extremely confined places. The Zipper portable belt fastner has a transport height of 9¼", and a vertical working height with levers extended of only 16". *Scandura, Inc.*

Circle Service No. 79

Lift Truck

The ability to handle loads in and out of boxcars while maneuvering in aisles laid out for smaller capacity is one of the features of this new lift truck.

Power steering allows the operator to utilize the truck's short turning radius and overall length to maneuver in minimum aisle widths. *Hyster Co.*

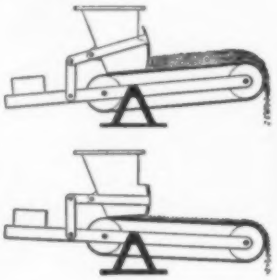
Circle Service No. 78

Truck

This new White truck (9064) is equipped with a White Mustang gasoline engine producing 200 HP at 2900 RPM, a five speed main transmission and a three speed auxiliary transmission and a tandem drive rear axle. Bumper to back of cab measurement is 90 inches and measurement from back of cab to center line of rear axle is 24 inches. *The White Motor Co.*

Circle Service No. 77

Feeder



A very simple constant weight feeder uses the principle of counter-weighted balance beam. When the material flowing on one side becomes slightly heavier or lighter, the linkage attached to the gate corrects the supply and returns the quantity discharged to the original weight fed. *Hardinge, Co., Inc.*

Circle Service No. 76

Tool Cabinet

To improve plant appearance and protect vacuum cleaning tools as well as accessories from loss or damage this 78" x 40" x 18" reinforced steel cabinet is ideal. *U. S. Hoffman Machinery Corp.*

Circle Service No. 75

Kilns

Kilns range in size and models to meet the requirements of beginning potters up through large industrial use shuttle kilns. The firm offers five models in three series which range from one to sixteen cu ft. oven capacity, in a variety of firing speeds and ranges with any type of automatic safety control equipment. Kilns come in three pastel colors or can be finished to fit any decor. Mounted on easy roll casters, kilns can be easily moved. *Denver Fire Clay Co.*

Circle Service No. 74

Moisture System

To accurately determine percent moisture by weight this firm has introduced a fluid moisture system for liquids and slurries. Data presentation in this system is in the form of direct numerical print-out on paper tape. *Nuclear Chicago*

Circle Service No. 73

Tractor Scraper

A new tractor scraper automatically matching power to job conditions with 280 maximum horsepower has many major features including: 18 cu. yd. heaped capacity, an all new design turbocharged engine, 30 mph road speed, effort saving, air-actuated cable control and unitized construction. *Caterpillar Tractor Co.*

Circle Service No. 72

Conveyor Feeder

This new pneumatic conveyor feeder measures 16'8" in length, has a 4" x 24" trough that can move bulk or granular material or assembly parts at capacities of up to 30 tons per hour. The flow rate can be easily changed. *National Air Vibrator Co.*

Circle Service No. 71

NEW LITERATURE

Crane-Excavator—The bulletin fully describes the machine, which is rated as a 1½-yd. shovel and 36-ton crane. *Koehring Div.*

Circle Service No. 70

Standards—For indicating and recording instruments and automatic controls for industry. *Scientific Apparatus Makers Association.*

Circle Service No. 69

Loaders—A new catalog on four wheel drive loaders has just been released. *J. I. Case Co.*

Circle Service No. 68

Drill Rigs—New catalog No. 615 covers the complete line of hydraulic-powered drill rigs, tools and accessories. *Mobile Drilling, Inc.*

Circle Service No. 67

Rotary Feeder—A new bulletin on rotary feeders for feeding bulk materials, and chemicals under high differential pressures is now available. *Beaumont Birch Co.*

Circle Service No. 66

Spray Drying—A reprint of a feature article on the spray drying of abrasive settling tank fines. *Bowen Engineering Inc.*

Circle Service No. 65

Profitable Management—This new booklet deals with a variety of business problems through selected case histories. *Dun & Bradstreet, Inc.*

Circle Service No. 64

Lift Trucks—Complete line of lift trucks in the 2,000 to 10,000 lb capacity ranges is described in this new 16 page catalog BU 660. *Allis Chalmers Mfg. Co.*

Circle Service No. 63

Surfacing—The data sheet discusses the use of manganese steel in industry and the need for special care in repairing worn or broken parts made of this material. Techniques for best results are suggested. *Wall Colmonoy Corp.*

Circle Service No. 62

Live Bin Feeder—The development, construction details and outstanding features of a new live bin feeder for metering all dry materials are described in this new technical bulletin. *Vibra Screw Feeders, Inc.*

Circle Service No. 61

Who says there is no difference between insulating firebrick? This unretouched photograph shows two courses of B&W IFB in a salt glaze kiln crown built of competitive insulating firebrick. See how the competitive IFB have glazed after only five burns—clear proof there is no "or equal" for B&W Insulating Firebrick.

B&W

THE BABCOCK & WILCOX COMPANY

REFRACTORIES DIVISION

R639

B&W Firebrick, Insulating Firebrick, and Refractory Castables, Plastics, Ramming Mixes, Mortars, and Ceramic Fiber.

Circle Service No. 17

ADDITIVE-A BY THE TANK CAR SAVES MONEY FOR DENVER BRICK AND PIPE!

When a clay products manufacturer buys an additive in tank car quantities, he must be convinced that it is beneficial to his operation. This is exactly the feeling of the management of Denver Brick and Pipe, Denver, Colorado, where Additive-A is such an important cost-saving factor.

Our sales engineers will gladly show you how Additive-A can effect important savings in your operation and make definite improvements in the areas listed below.

Faster drying
More first-quality ware
Tougher green ware and dry ware
Help in eliminating white scum
Lower extrusion power requirements
Less wear on dies, augers and liners

Write or wire:

Chemical Products
Department No. BCR-71
Kimberly-Clark Corporation
Neenah, Wisconsin

Kimberly-Clark *Contributing Associate S C P I*

Circle Service No. 18

Orchids

to

UNITED STATES CONCRETE PIPE COMPANY

SUBSIDIARY OF PITTSBURGH COKE & CHEMICAL COMPANY

on the completion and dedication of its new Plant 12
in Ocala, Florida
from Chemical Products Corporation
*world's leading producer of plastisols**
for molded-in-place vitrified clay sewer pipe joints

It is gratifying to see another member of the ever-growing vitrified clay pipe industry expanding its facilities to meet America's demand for life-time sanitary sewerage systems coupled with cost-cutting compression joints.

***CHEM·O·SOL®**
GOING PLASTISOLS ONE BETTER

Chemical Products Corporation East Providence, Rhode Island

Circle Service No. 19

OHIO KILNS will do the best job for you . . .

ANOTHER OHIO KILNS INSTALLATION!

Twin Kiln Installation at Rockford Brick and Tile Co.

Ohio Tunnel Kilns are made for all types of ware, and the largest and smallest-sized production. As such, they are ideally suited for **your** plant—no matter what its size or capacity.

With Ohio Tunnel Kilns you get the most UNIFORM BURNING, the most even colors, with the least possible loss.

They cost less to install in your plant, because they are produced in volume and at minimum cost. All the materials are fabricated in our large plant, shipped to your site, and erected there by our own professional crews.

Ohio Tunnel Kilns fit your pocket-book as well as your operation. All of Ohio Kilns' exclusive features are yours at no extra cost!

NOW AVAILABLE!

The fully automatic OHIO CONTROL SYSTEM is now available for programmed control of periodic kilns. It performs equally as well as on our tunnel kilns. Present installations include round down-draft, shuttle, laboratory, and other periodics suited to programmed firing. The system is fully automatic and controls the firing from the initial light-up through peak temperature and turn down. It will faithfully follow any firing curve.

The OHIO CONTROL SYSTEM is completely assembled in our shops and shipped to you ready to place in operation. **Write for prices!**

OHIO KILNS
GRANVILLE, OHIO • JU 2-2571

Circle Service No. 20

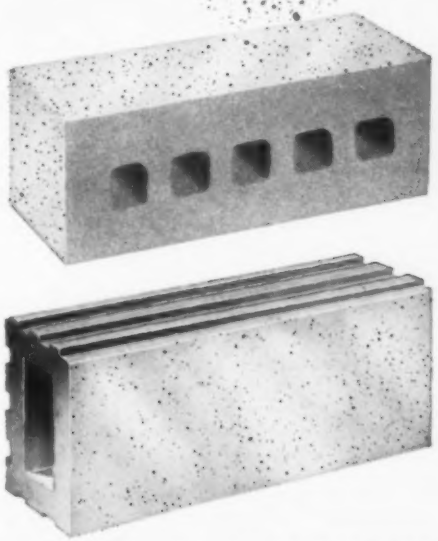
NOW... COLORED SPECKS

to brighten your profit outlook

Add colored specks to your glaze and your brick and structural facing tile will have that "wanted look" architects write into specifications.

Everyone likes specks. Drakenfeld has them in permanently bright colors – greens, pinks, blacks, yellows, blues, browns – in a variety of screened sizes. Single colors will turn out as peppered effects. You can use several colors to produce spattered surfaces. You can use specks of one color in a glaze stained a contrasting or complementary color. Or, it's easy to create attractive scatter patterns with a mix of colors. The possibilities are practically endless.

Architects want color and more color. Drakenfeld Colored Specks now give you another means of capitalizing on this trend. Write for samples, prices and application information.



CALL ON *Drakenfeld* **YOUR PARTNER IN SOLVING COLOR PROBLEMS**

B. F. DRAKENFELD & CO., INC.
Executive Offices: **45 Park Place, New York 7, N. Y.**
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LOS ANGELES 54, California Phone ANgelus 9-9311

BRAUN-KNECHT-HEIMANN COMPANY, 1400 Sixteenth Street
SAN FRANCISCO 19, California Phone: HEmlock 1-8800

When Ground was Broken for UNIVERSALS' FLORIDA PIPE PLANT the plans logically specified

DRYERS & OVENS

Here is one of a battery of 4 such specially designed, gas fired Lanly dryers in the World's Most Modern Automated Sewer Pipe Plant; recently completed by the Universal Sewer Pipe Corporation of Florida at Ocala, Fla.

Three dryers take the output of the forming machines and the fourth drys branches and fittings.

Each dryer is four tracks wide with each track holding 20 racks of green pipe. Total dryer capacity is 5120 eight-inch sewer pipe per charge. Progressive temperature increases from 115° F. at the charging end to 195° F. at the discharge end. Eight fans per dryer re-circulate air through the horizontally racked pipe. Water content in the pipe is reduced from 13% to less than 3% in only 8 hours.

Special rack pushers are synchronized with discharge-end door operation. An intermittant discharge of dried pipe is effected.

The pipe is later processed in 3 Lanly plastisol joint curing ovens where Universal's patented "Unilock" is applied to the pipe.

The LANLY COMPANY

2808 Euclid Avenue, Cleveland 15, Ohio

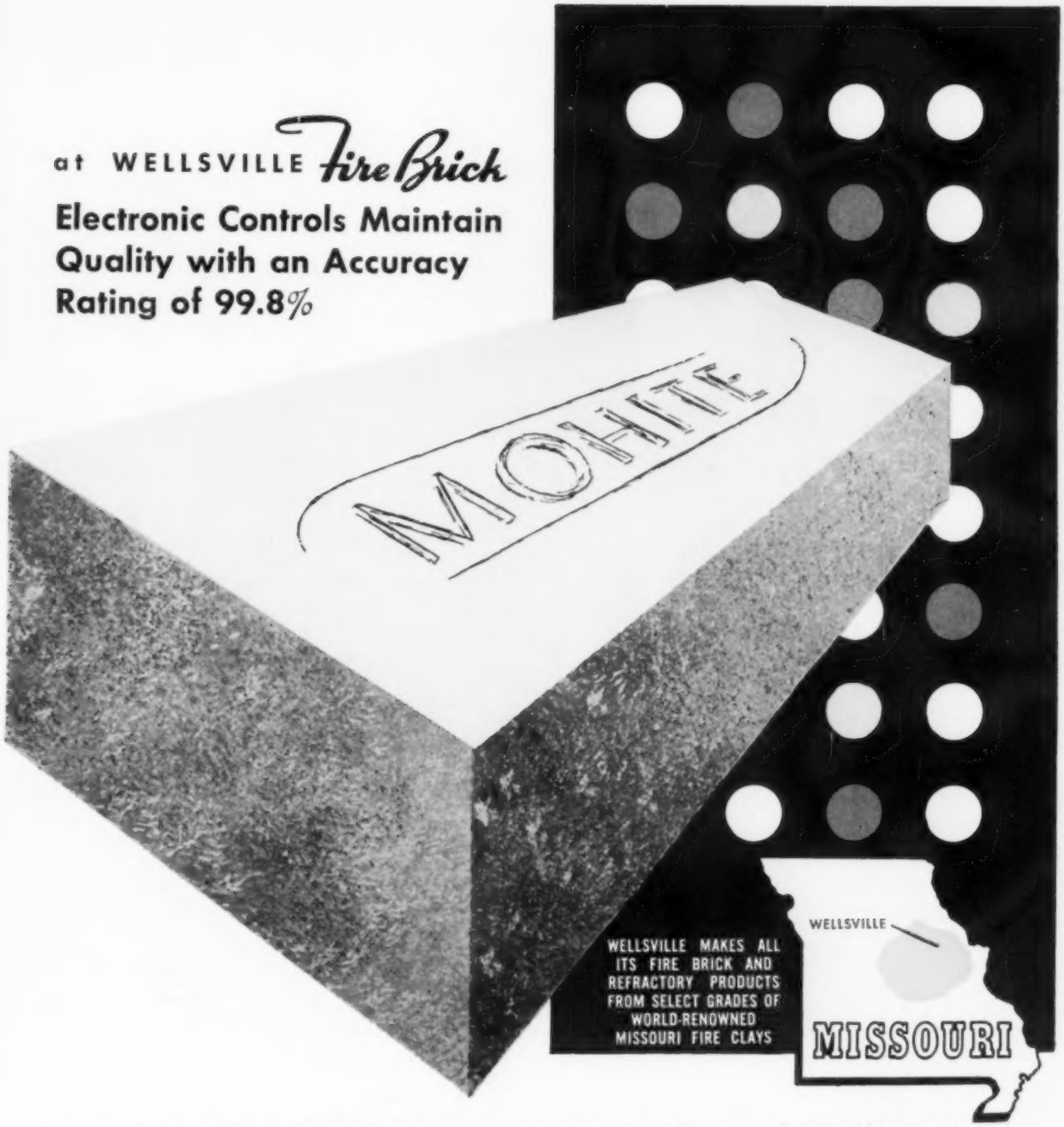
Find Your Representative in The Yellow Pages

Circle Service No. 22

Atlanta, Georgia • Birmingham, Ala. • Boston, Mass. • Chicago, Ill. • Cleveland, Ohio
Toronto, Ontario • Columbus, Ohio • Detroit, Mich. • Buffalo, N. Y.
Pittsburgh, Pa. • Rochester, N. Y. • San Francisco, Calif. • St. Louis, Mo.

at WELLSVILLE *Fire Brick*

Electronic Controls Maintain Quality with an Accuracy Rating of 99.8%


MOHITE
WELLSVILLE MAKES ALL ITS FIRE BRICK AND REFRACTORY PRODUCTS FROM SELECT GRADES OF WORLD-RENOWNED MISSOURI FIRE CLAYS
WELLSVILLE
MISSOURI

Improving the quality of its products is a progressive policy at Wellsville Fire Brick Company.

In the last ten years Wellsville increased its capital investment over 500% with only a 20% increase in production. As a result this modern plant runs with the precision of a fine watch.

Automation. New machinery. Skilled workers. Electronically controlled grinding and batching equipment (a first in the Refractories Industry) guarantees maximum quality control by keeping errors to less than 2/10ths of 1%. To this has been added the most modern tunnel kilns and the best brick-making machinery now available.

THAT'S WHY YOU CAN . . . SPECIFY WELLSVILLE WITH CONFIDENCE

WELLSVILLE *Fire Brick* **COMPANY – WELLSVILLE, MISSOURI**

Local representatives throughout the nation to better serve you.

Circle Service No. 23

HYSTER

OIL CLUTCH
gives up to 10,000 hrs. service —
Only HYSTER® has it!

A HYSTER exclusive—optional on Challenger pneumatics—6,000 to 20,000 lbs. capacity.

Specify Hyster trucks with Oil Clutch—forget about early clutch failure.

Clutch plates bathed in oil—dissipates heat—retards wear—prevents damage.

Extra smooth inching and engagement.

Call your Hyster dealer, or write for literature.

INDUSTRIAL TRUCK DIVISION—Lift trucks, mobile cranes, straddle carriers
TRACTOR EQUIPMENT DIVISION—Construction and logging equipment
MARTIN TRAILER DIVISION—Heavy machinery hauling trailers
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Manufactured in: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill.
Australia • Brazil • England • France • The Netherlands • Scotland • Union of South Africa

HYSTER COMPANY
INDUSTRIAL TRUCK DIVISION
P. O. Box 847 • Danville, Illinois

Circle Service No. 24

Editorial

Time *Is* Money in This Business

TIME has rapidly become the essence of building construction. As construction costs have soared and more income has been required from property to make it economically worth while, speed of constructing buildings has assumed new importance.

Take an apartment building whose monthly rentals are to be $100,000. A delay of 20 working days in completing the structure not only loses this income but also the financing costs, mortgage interest and capital investment interest for a month. This amounts to a total of considerable proportions.

This same economics also applies to office and commercial buildings, motels, hospitals, industrial and other large building projects.

Architects, engineers and contractors are seeking ways to speed up the completion of buildings. Material handling equipment, packaging, prefabrication of components are all looked upon with ever increasing favor.

The structural clay products industry needs to take heed to this growing trend. Wall panel construction, floor and roof panel construction must become an integral part of the construction industry.

While research is important and much needed—manufacturers must recognize the importance of TIME in construction and that even if panels may cost more per sq. ft. than hand-laid masonry, the time savings in putting the clay product in place would more than offset the cost.

J. J. Swec

Editor & Publisher

NEWS OF THE INDUSTRY

Plan First SCR Veri-Lite Production Plant

An important milestone in lightweight development program was reached on June 5, when Mapleton Development, Inc., signed a contract with the Selas Corp. of America, Dresher, Pa., for the purchase and installation of the first commercial "SCR veri-lite" aggregate production plant. Work on the new plant is starting immediately and it is hoped that initial operations can be started late this year.

Installation of the new plant will be at Minerva, O. The aggregate from the 4000 lb. per hr. furnace will be used in the production of lightweight glazed tile.

New Clay Pot Plant For Connecticut

A new pottery plant was recently completed in Kensington, Conn. by the Keller-Whilldin Pottery Co., North Wales, Pa. The company plans to produce red clay flower pots for the New England states. The plant has 85,000 sq. ft. of floor space available for its manufacturing operations.

Laird Brick to Increase Production by 50%

E. W. Laird, president, Laird Brick Co., recently announced expansion plans for the firm's plant at Puryear, Tenn. The project includes the construction of a new $100,000 kiln which will increase production by 50%, with a rated capacity of 1½ million brick per month. The Laird firm purchased the facility last June from the Dixie Brick and Tile Co., and is currently employing 30 persons.

New Lightweight Aggregate Plant Announced

Masslite, Inc., a new company backed by $1,105,000 investment from the Narragansett Capital Corp., Providence, R. I., will start work immediately on a $1,600,000 sintering and process plant at Plaineville, Mass., for the manufacture of lightweight aggregate. Completion is slated for late winter of 1961-1962.

Dixie Brick Resumes Plant Operations

The Dixie Brick Co., Natchitoches, La., recently resumed plant operations after a three month shut down for construction of new facilities. During this period, most of the old building was replaced with a new one and new housing was constructed for a new tunnel kiln and drier.

Announce Scholarship Program for Kansas

Bricklayers' Local #18, BM&PIU, Kansas City, Kan.; Bricklayers' Local #4, BM&PIU, Kansas City, Mo.; the Mason Contractors Association of the greater Kansas City Area, Inc., and the Structural Clay Products Institute, Region 18, joined hands in financially supporting a scholarship program for the two architectural colleges of Kansas.

A scholarship in the amount of $150 was awarded to the department of architecture of both Kansas University, Lawrence, and Kansas State University, Manhattan, Kan. The scholarship, $100 from each of the three links of the masonry chain, was given to the Department of Architecture to enhance architectural education and emphasize the interest labor and industry have in promoting architectural education.

Expanded Clay and Shale Association Plans Meeting

The mid-year meeting of the Expanded Clay and Shale Association will be held July 20-21, in the Association's home office city of Allentown, Pa. A report of the meeting will be carried in a future issue of the BRICK & CLAY RECORD.

General Shale Elects Board of Directors

At the General Shale Products Corporation annual stockholders meeting held recently, the following directors were re-elected: Glen Bruce, Vice Admiral Charles F. Coe, Thomas W. Goodloe, Charles M. Gore, C. C. Hyatt, Jr., W. E. Newell, William S. Sells, George C. Sells, and Sam R. Sells II. On the same day, at the quarterly directors meeting, the directors declared a regular quarterly dividend of 17 cents per share payable July 5th to stockholders of

Industry Members Receive Awards

Members of the Brick and Tile industries received recognition at the recent Builders Exchange Craftsmanship Awards Dinner Meeting. This is the fourth year that the Builders Exchange has given recognition to exceptional workmanship of craftsmen and contractors in the greater Cleveland area. The winners of these awards are shown receiving them from George S. Voinovich (left), chairman, Builders Exchange Craftsmanship Awards Committee. Others in the picture are: (left to right) Wilbur Wondrak, Albert M. Higley Co.; John Seman, John W. Winterich & Associates, Inc.; Raymond Zavagno, Cleveland Marble Mosaic Co.; Norman Carrie, George S. Rackle & Sons Co.; John Joseph Schraff, Martini Construction Co.

record as of June 15, 1961. The following officers were elected: Glen Bruce, chairman of the board and chief executive officer; C. C. Hyatt, Jr., vice chairman of the board; Wm. S. Sells, president; George C. Sells, vice president, sales; Roy H. Meade, comptroller and assistant treasurer; G. Fred Lorenzen, secretary-treasurer, and E. B. Tolliver, assistant secretary.

Robert G. Scott Honored at Dinner

Robert G. Scott, vice president and general manager of the Clay Products Association, Barrington, Ill., was honored for his 25 years of service to the association at a dinner recently given in his honor at the Bismarck Hotel, Chicago, Ill.

A silver tray was given Scott. In addition a handsomely bound book containing letters of congratulation and commendation from members and employes of the association was also given him.

Announce New SCPI Sales Training Class

The Structural Clay Products Institute, Washington, D. C. has started a new Sales Engineering Training Course for structural clay product salesmen. The class started July 10 and will continue to August 11.

Introduce Two Bills On Depletion of Clays

The Structural Clay Products Industry, Washington, D. C. recently released copies of two bills which were introduced in the House of Representatives, H.R. 7057 and H.R. 7058.

Bill 7057 was introduced to prohibit the retroactive application of the Cannelton decision to the structural clay industry.

Bill 7058, introduced at the same time, would apply to future years and would provide an allowance of 15% at the kiln feed. This is the same formula now applicable to limestone used for making cement and would give clay equitable treatment with cement.

All people connected with the clay products industry are urged to contact their Representatives in congress to support these bills, and to keep the Depletion Committee advised as to their efforts and the reactions of their Congressmen.

Plummer Made Fellow in Construction Institute

Harry C. Plummer (center), director of engineering and technology for the Structural Clay Products Institute, Washington, D. C., is made a fellow in the Construction Specifications Institute at the organization's recent annual convention in New York City. CSI President Glen H. Abplanalp (left) presents him with a medallion, symbol of the honor. Participating in the ceremony is Carl J. Ebert (right) secretary of the jury of fellows.

Japanese Contractors Tour SCPI Headquarters

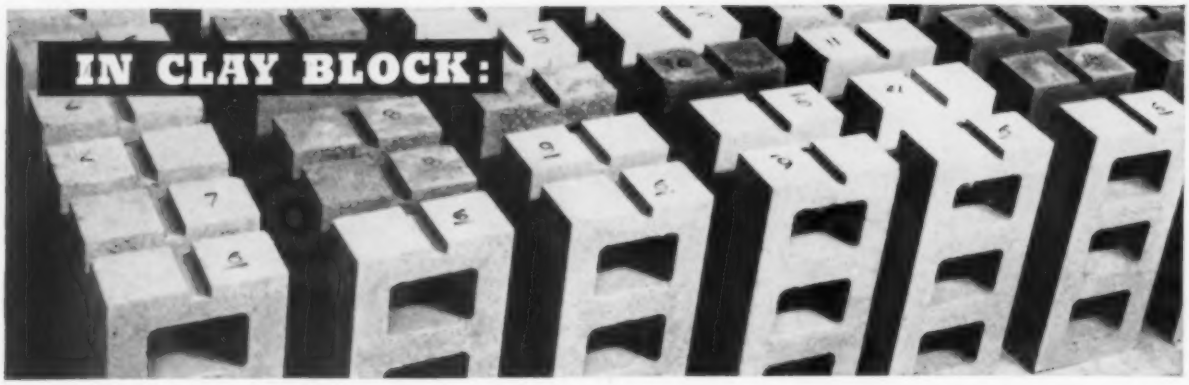
Since a brick is a brick in any language, this touring Japanese construction contractors team was interested in hearing the latest information about the American clay products industry during a visit to the headquarters of the Structural Clay Products Institute, Washington, D. C., recently. Cooperating with the Housing and Home Finance Agency, sponsors of the national tour, SCPI arranged a question and answer session with SCPI Executive Director J. W. Stryker (seated center). Mr. Tamotsu Tsuchimochi (fifth from the left, standing) is executive director of the Associated Contractors of Japan. HHFA Training Officer David G. Wells (second from right, standing) escorts the team on the tour. This is one of several visits by foreign construction executives in the past few years in which SCPI cooperates with the government.

Elect Directors, Officers At Marion Brick

The annual stockholders meeting of the Marion Brick Corp., Marion, O., was held recently.

The following Board of Directors was elected: James A. Hedgpeth of Marion, Dr. C. D. Dwight of Toledo, W. S. Merriman, Jr., of Marion, John Brown, Jr., of Marion, Charles D. Harmon of Marion, Dr. James Robson of Cleveland and W. S. Merriman, Sr., of Marion.

At a directors meeting immediately following the stockholders meeting, the following officers were elected: W. S. Merriman, president; W. S.



Why settle for less than refractory brick density, uniformity and appearance?

Refractory brick has all the qualities you would want in a clay block. It is tough and dense; accurate to size and has straight square edges on all faces. It is produced with less than 5% moisture,—set directly from press to kiln car, requires no curing or drying and comes from the kiln faster—with a minimum of shrinkage, spalling or cracking.

With the advent of lightweight aggregate, these same advantages can now be built into a DRY PRESS block which is competitive in price —yet far superior in appearance and quality to concrete block or extruded or wet-pressed clay block.

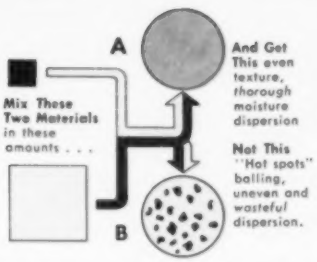
Controlled Dispersion

This block, of refractory-quality denseness and appearance, is prepared in a Simpson Mix-Muller by the same dry mix process used in over 98% of the refractory plants in this country . . . most of whom rely on Mix-Muller for *controlled dispersion* of moisture and an intimate, homogeneous mix.

Outstanding Properties

The resulting dry press block is easy to glaze, paint or color because it's *dense* and can be given any decorative texture, before firing. It has equal perfection on all faces for through-the-wall construction. This block can be used for backup—yet it cannot be recognized from face brick. It will command top prices because you can guarantee its uniformity. Your customer can judge its superiority of appearance for *himself*.

In the structural clay products industry wherever quality counts and intensive intimate blending calls for *controlled* dispersion . . . you'll find Mix-Muller. If you're considering Clay Block, why not consider marketing a decidedly superior, *dry pressed* product? **Write for details on Mix-Muller.** They are available in capacities of from ¼ to 60 cu. ft.


A
Mix These Two Materials in these amounts . . .
B
And Get This even texture, thorough moisture dispersion
Not This "Hot spots" balling, uneven and wasteful dispersion.

Here's how *controlled mulling* works:

Diagram shows comparative results of blending a minute amount of one material with large amount of another material in (A) MIX-MULLER and (B) conventional mixer. Savings in raw material, reprocessing time and quality of finished product are the outstanding *rewards* of mulling your product.

Model "LF" Mix-Muller has capacity of ¼ to ¾ cu. ft. Comes equipped with 1 HP motor and starter, V-belt drive, removable dust hood, crib and muller scrapers, liquid additions funnel, integral base for bench mounting and 4 pipe legs for floor mount. No foundations necessary. Has machined crib and mullers; discharge is automatic.

P659

SIMPSON *MIX-MULLER*® DIVISION

National Engineering Company • 654 Machinery Hall Bldg., Chicago 6, Illinois

HOW MULLING gives you controlled dispersion for better blends:

GOING: Mix is wetted, dispersion of coating media begins as lumps form.

GOING: Smearing, *spatulate* action breaks up lumps as mulling action disperses moisture.

GONE. Agglomerates almost gone as blending nears completion. Mix is homogeneous, thorough.

Circle Service No. 25

Merriman, Jr., executive vice president; James A. Hedgpeth, vice president in charge of manufacturing; John Brown, Jr., vice president in charge of engineering; Dr. C. D. Dwight, treasurer; Charles D. Harmon, secretary;

Announcement was also made that their new manufacturing facility, that has been under construction for over a year, in Brazil, Ind., will begin production the early part of August. Company prospects for the year appear quite good.

National Brick Introduces New Line of Face Brick

A new line of face brick, said to have the durability of China's Great Wall, was recently introduced by the National Brick Corp., a subsidiary of the United States Plywood Corp., New York, N. Y.

The new line of silica brick, according to George Kogel, is being offered in eight colors. The new brick uses materials similar to those used by the Chinese when they built the Great Wall, which is still in good shape after 22 centuries of the severest weathering. The only change is that modern processing methods were used.

Georgia-Carolina In $1 Million Expansion

The Georgia-Carolina Brick and Tile Co., Augusta, Ga., recently completed a $1 million expansion program. Eugene Long, president of the firm, said the expansion enables the plant to produce fine clay products with the latest and most efficient machinery. The new facility will increase production by 36 million brick, with new lines and colors. An estimated 50 additional workers will be used to handle the added work load.

New Plant Manager At Guignard Brick

Richard Winchell recently joined the staff of Guignard Brick Co., Columbia, S. C. as plant manager.

Winchell, a graduate ceramic engineer of Rutgers University, came to the company with a varied experience in the ceramic industry. He came to Guignard from Westinghouse Co.'s Atomic Power Division in Pittsburgh, Pa., where he was working with solid reactor fuels.

Texas Vitrified Presents Scholarship Award

Winner of a four-year university scholarship, James R. Brewton is pictured in the center, with Production Manager R. L. Blessing and Personnel Director Don Bailey of Texas Vitrified Pipe Company, Mineral Wells, Tex., as plans were discussed for summer employment at the firm's clay pipe plant. The chemical engineering scholarship amounts to $600 per year, starting with the fall semester at University of Texas. It is the second so far awarded by Tex-Vit to a high school graduate in their local area.

United Brick Reactivates

The Coffeyville, Kan., plant of United Brick Division of American-Marietta Co., is being reactivated after being closed for nearly a year, according to an announcement recently by Millard O. Peirce, general manager.

Rennie Elected Member Of Controllers Institute

John H. Rennie, comptroller, Cooksville-LaPrairie Brick Ltd., Montreal, Quebec, has been elected to membership in the Controllers Institute of America, New York, N. Y.

Robinson Brick Plans Plant Expansion

The Robinson Brick and Tile Co., Denver, Colo., has announced plans for a $1,750,000 plant. The plant will be located on 50 acres near Denver.

Announcement of the expansion move was made jointly by W. W. Robinson president; F. George Robinson, executive vice president in charge of the brick division; and A. Curtis Jackson, vice president in charge of engineering and construction.

W. W. Robinson said the plant will manufacture brick in a kiln spanning nearly the full length of the new 860-foot-long plant. This will free one more kiln at the present plant for production of structural glazed tile.

"Construtcion of the new brick plant will enable us to increase tile production at the present plant, yet keep brick production at present levels with higher quality," Robinson said.

The new plant will rise two stories and will encompass nearly 100,000 square feet. The main building will be 110 feet wide and will run north and south. An adjoining grinding plant will be three stories high. Of the four kilns now in operation at the existing plant, two manufacture structural glazed tile and two brick. Completion of the plant, which will have the latest in automated devices, is scheduled for early next year. The new facility will have a capacity of 60,000 individual brick per day.

Robinson disclosed that the company's sales passed the $3.5 million

mark in 1960. The company markets 66 types of brick in 12 colors, six textures and five sizes. It also makes two sizes and 15 colors of structural glazed tile.

A company subsidiary, the Vitri-Neer Corp., of Denver, manufactuers "3-6 VitriNeer," a ceramic glazed facing material, in 18 colors and also produces ceramic glazed sills.

Develop Automatic Brick Laying Machine

A machine, which is capable of laying brick at the rate of 15 per minute in either a 10" cavity wall, a four inch single thickness wall, or a brick veneer, has been successfully tested by Demarest Machines, Port Washington, N. Y.

Further information on this machine can be had by writing Demarest Machines, 1 Terrace Place, Port Washington, N. Y.

Cite 590 Years Service At Robinson Clay

Forty-five employees, representing 590 years of long and faithful service to the Robinson Clay Product Co., Akron, O., were among veteran company employees cited by the company recently.

Obituaries

William C. McGolphin

William C. McGolphin, a leading figure in the ceramic tile industry for more than 40 years, died recently at the age of 73.

Mr. McGolphin was president of Natco Clay Products Ltd., Toronto, Ont.

Charles J. Nock

Charles J. Nock, 62, died recently in the Southwest Community Hospital, Berea, O. Mr. Nock was associated with the Nock Fire Brick Co.

H. William Jewell

H. William Jewell, died recently in Westminster, Calif., where he had resided since his retirement from National Sewer Pipe Ltd., Oakville, Ont. Mr. Jewell was chief of research and development for the company.

Alton Brick Offers Architects New Panel Case

Charles Jacoby (seated left), sales manager of the Alton Brick Co., St. Louis, Mo., explains function of the firm's new portable brick displayer to Harris Armstrong, past president of the St. Louis Chapter of the A.I.A. Standing is Mike Punch, vice-president of Hill and Hill Displays, Inc., designers and producers of the unique case.

Refractory Sessions to Feature Glass and Steel

Some of the papers which will be presented at the refractory sessions of the 14th Pacific Coast regional meeting of the ACS to be held in San Francisco, Calif., October 25-28, have been announced by Donald W. Kucera, Harbison-Walker Refractories Co., San Francisco, Calif.

A CERAMIC DATE AT THE GOLDEN GATE

The official slogan of the 1961 Pacific Coast Regional Meeting, it proclaims the meeting of all ceramists, from east and west, at the Jack Tar Hotel, San Francisco, October 25 to 28. Make this meeting a must!

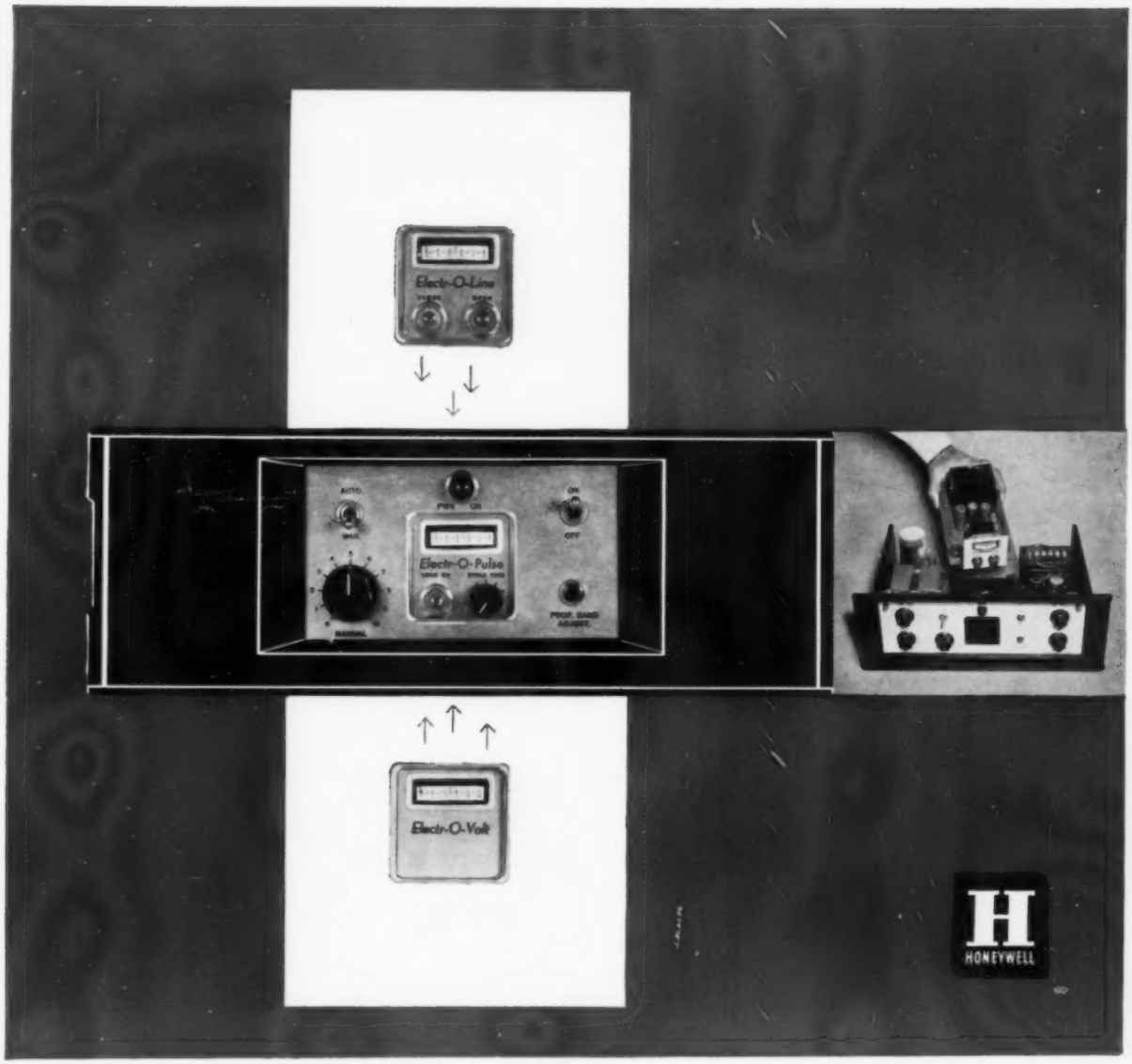
Don McTaggart and Charles E. Dyer of Corning Glass Works, Corning, N. Y., have prepared an illustrated paper which explains the destructive processes in the environment of the super structures and regenerators of production glass furnaces. These destructive processes are found to involve reactions between the refractories and solids, liquids and vapors in the environment, as well as cyclic volume changes of condensate liquids. McTaggart and Dyer will describe "Test Devices to Study the Effect of Glass Furnace Environment on Refractory Materials".

Walsh Refractories Corp., will discuss their new refractories for the glass industry and glass stones will be the subject of the paper by David Johnson of Corhart Refractories Co.

E. A. Thomas, the chief ceramic engineer with Charles Taylor Sons, research and development department in Cincinnati, will present a progress report on recent developments in the application of zircon refractories to glass furnace construction, while James L. Lange, also with Charles Taylor Sons, will offer insights into the application of bonded mullite for the steel industry, particularly in blast furnace stoves where higher than normal hot blast temperatures are being used.

F. B. Vanderbilt, president of R. T. Vanderbilt Co., Inc., New York, N. Y., has announced the appointment of C. C. Treischel as manager, Ceramic Department.

Ira E. Sproat, who has been manager of this department since its inception, will devote his time to technical research problems and writing.



Three ways to get peak performance from your furnaces!

1. Electr-O-Line Control Unit for position-proportioning control with reset and rate action.
2. Electr-O-Pulse Control Unit for time proportioning control with reset and rate action.
3. Electr-O-Volt Control Unit for current-proportioning control with reset and rate action.

These new Honeywell three-mode control units can actually improve the performance of your furnaces by providing the exact temperature that's needed. They include features that cannot be matched: Smooth three-mode control with extra-wide band adjustments. You can adjust the proportional band up to 500%; reset action from 0 to 100 repeats per minute; and rate time from 0 to 10 minutes. "Auto-man" switching is bumpless.

Modular construction with interchangeable control output sections. Modular plug-in construction is used throughout. Amplifier and power supply sections are the same for all three units.

For more complete details on these and other types of furnace controls, contact your nearby Honeywell field engineer. Minneapolis-Honeywell, Wayne and Windrim Aves., Phila. 44, Pa. In Canada, Honeywell Controls, Ltd., Toronto 17, Ont.

Honeywell

First in Control SINCE 1885

HONEYWELL INTERNATIONAL Sales and Service offices in principal cities of the world. Manufacturing in United States, United Kingdom, Canada, Netherlands, Germany, France, Japan.

Circle Service No. 26

Spaceflight Launch Pad Uses Special Refractory

When astronaut Commander Alan B. Shepard successfully piloted America's first space ship, he began his journey from Cape Canaveral launching pad No. 5. This pad is surfaced by a heat resistant refractory concrete developed and installed by the A. P. Green Fire Brick Co., Mexico, Mo. The engineering concepts of building a refractory pad to resist the tremendous heat and thrust for Redstone launchings became a reality upon its completion in 1955.

Engineers of the Missouri company have been associated with the missile program from its early stages and developed heat resistant refractory materials to withstand the extreme temperatures and thrust encountered in the testing of today's missiles.

H. P. Homolya, Chief Engineer of the Green Company, said, "The refractory surfacing of the test launching pads at Cape Canaveral is a product of many years of development . . . the original pads are still giving excellent service, as evidenced by the successful spaceflight of Commander Alan B. Shepard in his Project Mercury capsule. Pad No. 5 at Cape Canaveral was the first refractory surfaced launching pad."

Basic Elects Board Chairman and President

At their recent meeting the board of directors of Basic Inc., Cleveland, O., created the office of chairman and chief executive officer to which position it elected H. P. Eells, Jr. Eells has served as the company's president since 1919. Succeeding Eells as president is Warner B. Bishop, former vice president-sales.

Gladding, McBean Names Refractories Sales Manager

William E. Whitehouse has been named sales manager of Southern California for the Refractories Division of Gladding, McBean & Co., Los Angeles, Calif., it was recently announced by L. H. Paulsen, general sales manager.

Peer Appointed General Sales Manager By Basic

George J. Peer was recently appointed to the newly created post of general sales manager for Basic Inc., Cleveland, O.

Harbison-Walker Elects Welfer Secretary

Thomas Welfer has been elected secretary of Harbison-Walker Refractories Co., Pittsburgh, Pa., by the company's board of directors. He succeeds G. F. Cronmiller, Jr., who retired as vice president and secretary after 48 years of service.

Thomas Welfer

Joseph F. Knight

Kaiser Refractories Appoints Knight

The appointment of Joseph F. Knight as vice president of operations for Kaiser Refractories Division of the Kaiser Aluminum & Chemical Corp., Oakland, Calif., was recently announced by Frank M. Cashin, president.

American Refractories & Crucible Adds to Staff

The additions to the executive staff of the American Refractories & Crucible Corp., have been announced by Robert M. Terry, president of the North Haven, Conn., firm. According to Terry, the additions are in line with certain organizational shifts designed to improve sales and engineering services to industrial users of the company's products.

Alexander R. Raeburn, a director of the corporation, has been elected to the post of secretary-treasurer; Charles H. Pierce has been appointed director of sales and Denys R. Rosling will head the newly created Engineering Sales-Service Department.

Norton Makes Sales Force Changes

The Norton Co.'s Refractories Division, Worcester, Mass., has made the following changes in its sales organization:

Bruce Cramer, formerly refractories engineer in the Teterboro, N. J., area, has been appointed to the newly formed technical development department at the main plant in Worcester, Mass.

Cramer is succeeded in the Teterboro post by Jacob J. Walter, formerly refractories engineer in Philadelphia, Pa.

John A. Trogolo has been transferred from Chicago to succeed Walter and Frederick W. Stover, who has recently served in the Product Engineering Department at Worcester, has been named refractories engineer to succeed Trogolo at Chicago.

Engineer Transferred By A. P. Green

John T. Sellers of Jackson, O., a ceramic engineer for the A. P. Green Fire Brick Co., has been transferred to the company's home division of engineering and construction at Mexico, Mo.

General Refractories Appoints Abbott

The General Refractories Co., Chicago, Ill., recently announced the appointment of Mark L. Abbott as assistant district sales manager for the Chicago area.

Moore to Represent Chas. Taylor Sons

The appointment of Robert S. Moore as sales representative was recently announced by the Chas. Taylor Sons Co., Cincinnati, O.

Scholarship Aid

Ruth Etta Peay, Wilkinsburg, O., has received a $500-per-year scholarship from the Harbison-Walker Foundation, Inc. She plans to attend Duquesne University. Miss Peay's father, Joseph E. Peay Jr., is an employe of the firm's Hays Works.

BOYD PRESS IS BASIC / for higher pressures for high calcine refractories

The MODEL Y POWER PRESS: for high density blast furnace brick

Increased customer demand for high density, high calcine content refractory brick for blast furnace lining puts renewed demands on your brick press. With calcine contents continually increasing, more and more refractory producers are turning to the new, heavy duty Model Y Boyd Press.

Here's a machine built to deliver the higher pressure required, stroke after stroke. Exclusive *Top-'N-Bottom* action cuts density variance to a minimum, and an automatic de-airing "pause" helps to eliminate distortion and spalling. A big 37″ x 21″ x12″ mold cavity can help you make the *most* of higher pressures—to increase brick production per hour and or handle larger size molds.

Why not investigate how a *step up* to Model Y can pay its own way in increased production of high calcine refractories —and other materials requiring maximum pressure with minimum distortion? *Write for details.*

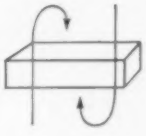
These exclusive features help Model Y make the most of high compaction pressures:

BOYDAMATIC

Easily operated control system provides full automatic operation—or selective combination of manual and semi-automatic controls over various press operations.

TOP-'N-BOTTOM ACTION

Pressure is exerted upon both the top and bottom of brick in the mold—to reduce density variance to a minimum, insure better, more stable brick.



DE-AIRING PAUSE

Momentary pause in press operation allows air to escape before final compression stroke. You get dense, stable brick to reduce distortion in firing and use.

Circle Service No. 27

BOYD POWER PRESS

CHISHOLM, BOYD & WHITE COMPANY

SUBSIDIARY OF Wehr Steel Company

610 W. 57TH STREET • CHICAGO 21, ILLINOIS

460

One of the Nation's F
built for Universal Sewer Pipe

by Varco

Strength . . . efficiency . . . economy . . . long-life . . . beauty . . . These are things built-in to the new Universal Sewer Pipe Corporation plant in Ocala, Florida. Many have called it one of the industry's finest plants . . . one of the biggest and best. Comprising approximately a quarter-million square feet of floor space, the Uniframe steel structures were manufactured and erected by Varco, a leader in buildings for the Brick and Clay industry. It was our pleasure to serve Universal Sewer Pipe . . . to give them the buildings they wanted, when they wanted them. Before you build or expand, ask about Varco . . . the better building for less.

LONG, WIDE AND RUGGED

Main section of the USPC plant is 700' long. The buildings offer clear spans of 120', 100', 80' and 70'. Sheeting is corrugated asbestos applied with stainless steel fasteners to offset any corrosive action that might be caused by salt air conditions.

FRAMEWORK SUPPORTS EIGHT-TON CRANE

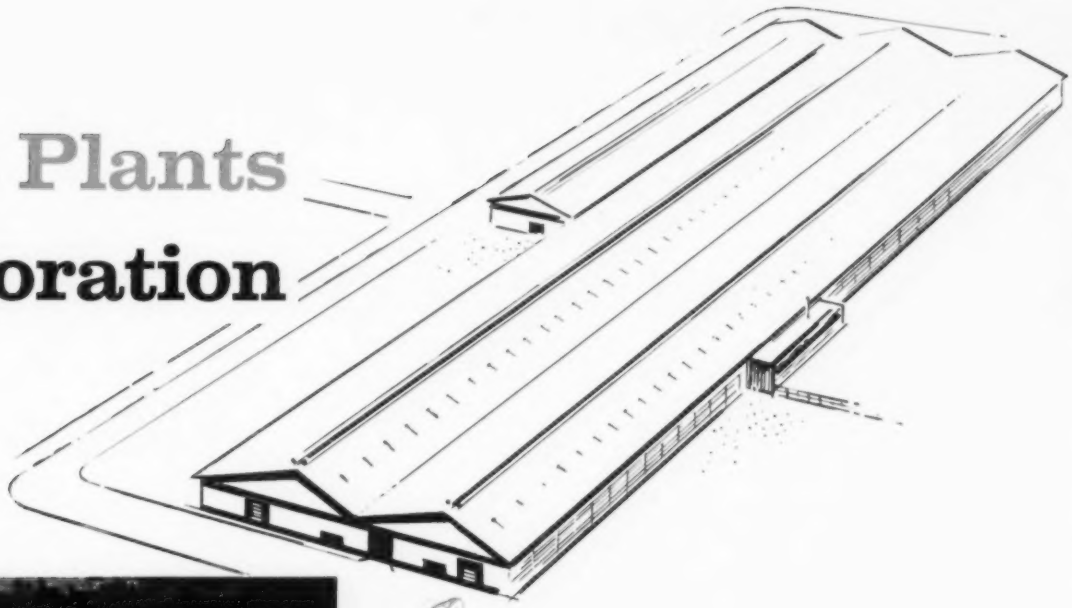
Three overhead cranes, with one, five and ei
building installation. Cranes were attached d

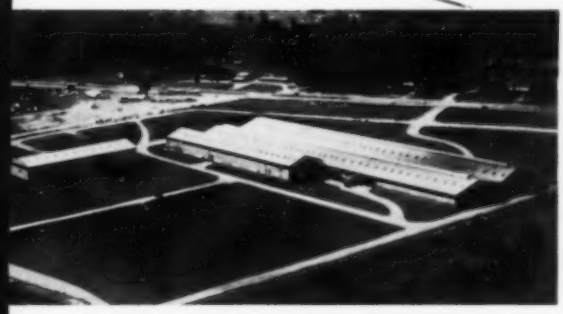
Varco R. G. VARNER STEEL

Circle Se

inest Plants

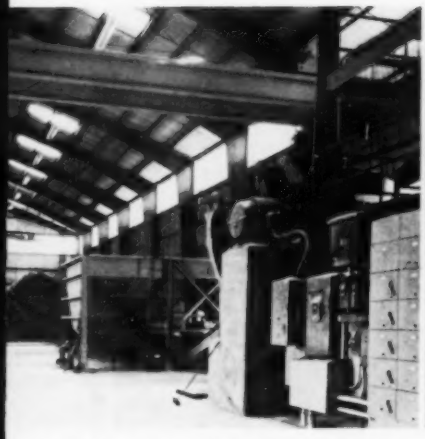
Corporation





UNIFRAME CONSTRUCTION WAS HURRICANE TESTED!

Varco's all-welded Uniframe Construction proved itself again. When half-finished, the buildings were subjected to the fringe elements of Hurricane Donna. Result—No Damage whatsoever.



-ton capacity, were included as part of the
ctly to the strong Uniframe bents.

CUSTOM ENGINEERING AND FAST SERVICE

Varco structures were custom engineered to meet the special needs of this modern plant. The kiln building (100' x 700') required a 20' column on one side, a 24' column on the other to offset a change in floor elevation. Even with this special design, the framework was erected and the 70,000 square foot building was under roof within six weeks of contract signing.

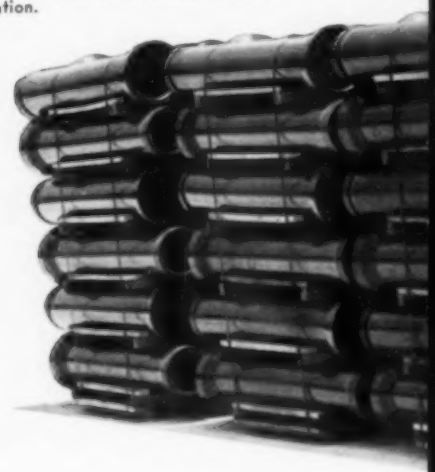
PRODUCTS • P.O. BOX 781 • PINE BLUFF, ARKANSAS • JE 4-6030

Three Million Dollar Plant

Clay Pipe Joins Florida Boom

Unit produces 100 tons of pipe per day with modern machinery and 465-foot tunnel kiln

The finished pipe, after leaving the jointing station are palletized and strapped with steel strapping for fork lift handling. Trucks equipped with "Jiffy-Lift" unloaders take the palletized load to the customer's delivery location.



Florida has a new industry! The state's first clay pipe plant has just been placed in service and is now producing pipe for the booming residential construction market in the area. That this market could support a plant of this size by buying the products was proved by the shipments and sales of clay pipe, which were imported from the Ohio manufacturing area.

This fact, along with the fact the company's patented Uniloc joint and jointing material was well accepted by the engineering field in the state, prompted the United States Concrete Pipe Co., with main offices in Cleveland, Ohio, to consider the location of several sites for the possible manufacture of clay pipe in the market area. A 40-acre site was selected about two miles south of Ocala, Fla., on U.S. Highways 301, 441 and 27. The site is also served by the main line of the Seaboard Airline Railroad and is located but two miles from docking facilities at Santos on the proposed barge canal. The $3,000,000 plant is the twelfth manufacturing location of United States Concrete Pipe Co., a wholly owned subsidiary of Pittsburgh Coke & Chemical Co., Pittsburgh, Pa.

The success of the plant was almost guaranteed, since the company had a sales outlet in Fort Lauderdale and had an excellent idea of how many pipe could be sold in the Florida market. And even though hardly any of the labor in the area had ever seen a pipe before, much less had any experience with the manufacture of it, the labor is of extremely high quality and of plentiful supply, another fact upon which the company's decision was based to locate in Ocala.

The entire 40-acre site has been fenced in and sodded, with a modern office building constructed, so that the plant site looks like anything but the typical clay products plant. Palm trees, along the highway and around the office give the site the appearance which many people expect when traveling through Florida.

Raw materials for the operation are shipped into the state by hopper cars. These materials consist of a shale and a clay and are mined in

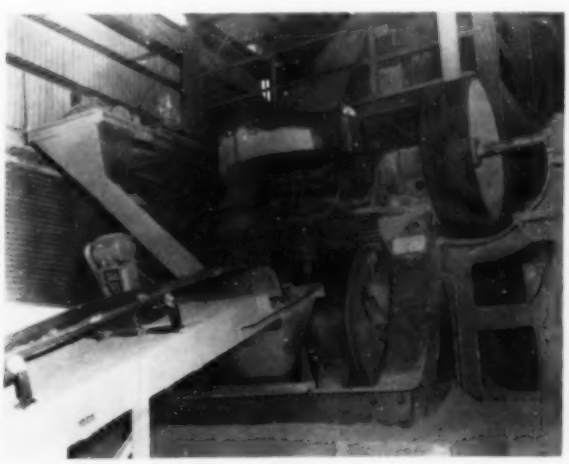
Raw material from the rail cars is collected by this Meco apron conveyor which feeds the Eagle Senior crusher. The crusher consists of two toothed rolls and is used for the primary crushing of both clay and shale.

A Hough Payloader collects materials from the raw material storage and deposits them into either of two hoppers, under which are located even feeders which feed the material onto a common conveyor belt leading to the dry pan.

Cordova, Ala. The cars are unloaded by gravity into a hopper, under which is located a Meco apron feeder which delivers the raw material to an Eagle double-roll senior crusher. The crusher is located in a building 30 feet square, separated from the rest of the operation. A belt conveyor equipped with a reversible tripper delivers the crushed material to a crushed storage area in the 70′ x 240′ grinding building. The Varco steel building has an eave height of 30′ and in it are located two crushed storage areas, one for the shale and the other for the clay, as well as the grinding and blending equipment.

A Hough Payloader is used to deliver crushed material to either of two hoppers, each equipped with a Meco even feeder which feeds the material onto a common belt. At this point a certain amount of blending can be obtained if desired, but generally only one of the materials is run through the circuit at one time, since the main blending of the clay and shale is accomplished at an automatically controlled batching station further on in the circuit.

The common conveyor delivers the crushed material to an American 384 grinder equipped with a motor load control, which controls the feed to the grinder. As the motor starts drawing a preset amperage on the control, this feed belt shuts off. When the amperage on the pan motor is reduced to another preset point on the control, the feed belt starts and delivers additional material to the pan.

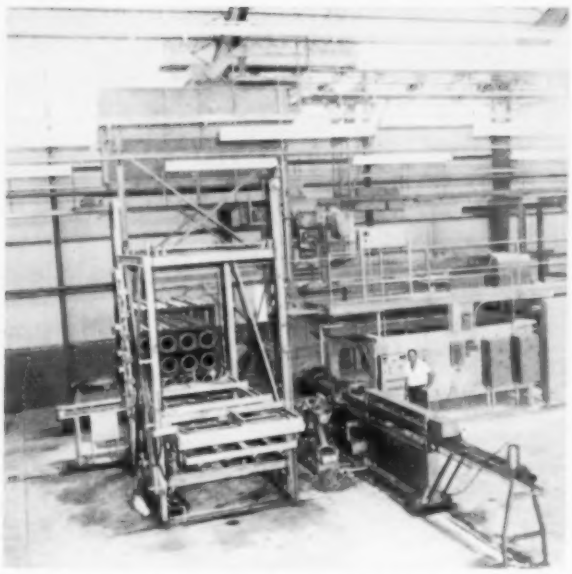


The American 384 grinder is equipped with a motor load control which electrically controls the feed to the pan. Trailings from the screens are reground in this machine along with the normal load of either clay or shale.

A conveyor belt from the discharge of the dry pan delivers the ground material to six Star Foundry Co., heated screens. The six heated screens are arranged in two tiers, with the top tier of three screens serving as scalper screens and the lower tier separating the fines. Oversize from the screens is returned to the dry pan for further grinding.

Another conveyor belt, which has its discharge end portable, delivers the screened material to one of four bins located above the Toledo Scale Co., batching equipment. This operation is automatically controlled by surge bins over the forming machines in the pressroom. As the need for material is dictated by the amount of material in the surge-bins, predetermined proportions of clay and shale, along with barium carbonate, are deposited onto a belt conveyor and delivered to a Smith turbine mixer with a 1½ cubic yard capacity where they are thoroughly mixed. After the batch is mixed for a predetermined time, it is automatically discharged onto another belt conveyor which delivers the material

Six Star Foundry screens, arranged in two tiers, are used for sizing of the raw material. The top tier of three screens serves as scalping screens and the lower tier separates the fines. All the screens are electrically heated.



One of the two Chambers machines in operation at the plant. One man on each machine controls the entire forming, finishing and rack-loading operation. Notice the surge bin above the machine in the upper left of photograph.

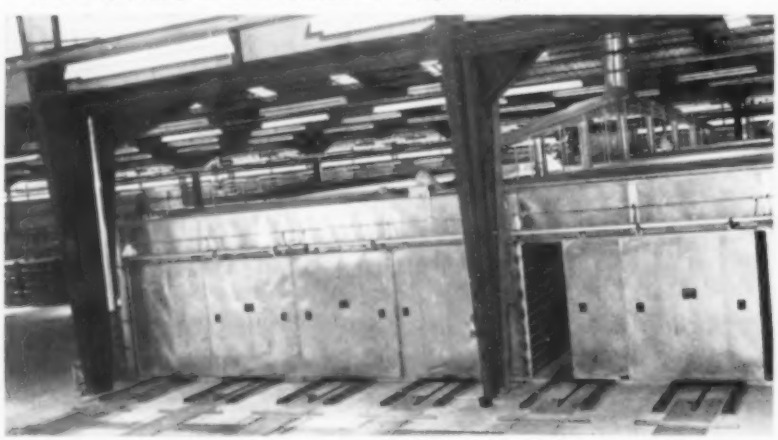
now ready for use to the before mentioned surge-bins. High and low level controls inside these bins control all the batching and weighing operations automatically.

Two Chambers Brothers Co., combination extrusion machines are used at the Ocala plant. Each machine is equipped with its own surge-bin and feeding devices. Under each surge bin is a Meco belt feeder which uniformly feeds material to a screw-conveyor which, in turn, feeds the pug mill. The advantage of the additional screw feeder in the circuit is that this feeder delivers the batched raw materials to the pug mill over the entire width of the tub. Water sprays located in the chute between the screw conveyor and the pug mill insure that the material is uniformly moistened before it hits the tub of the pug mill. This water spray is controlled automatically, both in gallonage delivered and the pressure at which it is delivered.

The Chambers #211 is equipped with a 28″ dia. twin tub pug mill consisting of two 12-ft. long tubs side by side. The material in the last 8 feet of the lower pug mill tub is pugged under vacuum. The #212 machine is equipped with a 34″ wide twin tub pug mill also with two 12-ft. long tubs of which the last 8 feet are under vacuum.

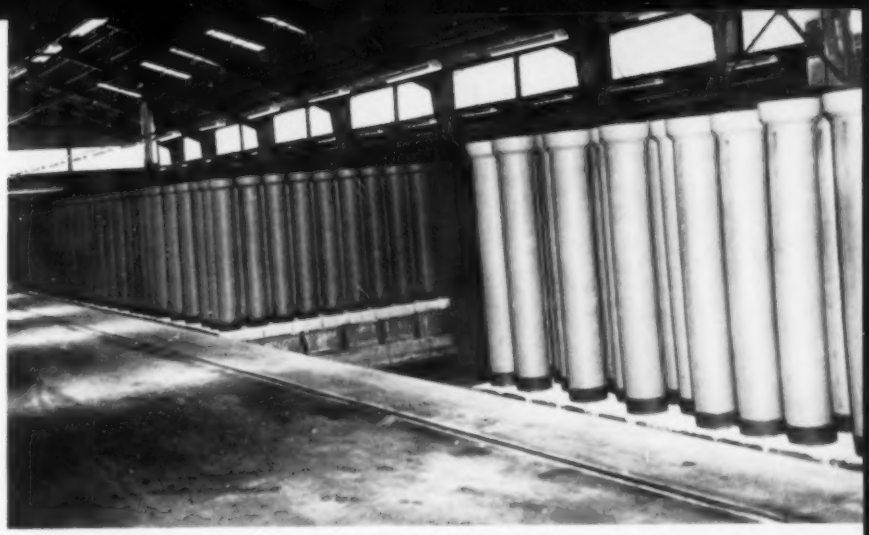
Material from the pug mill is discharged into the vacuum chamber of the machine where de-airing is completed before extrusion. The #211 extrusion machine is equipped with 12″ augers for making 4″, 6″ and 8″ pipe, while the #212 machine, equipped with 14″ or 16″ augers, will be used for making 8″, 10″ and 12″

Specially designed Lanly dryers were built to accommodate the production of the plant. Four dryers, each four tracks wide, are gas fired and have eight recirculating fans for providing horizontal recirculation through the pipe.



In the background is the specially designed Pearne & Lacy rack unloader which removes the horizontally set pipe from the racks and sets them vertically for setting on the kiln car. Two men set the entire plant production.

All the kiln car trackage is located four feet below the rest of the plant floor, so that the kiln car deck is at plant floor height. Here a train of cars has been moved to the green storage area.



pipe. All the pipe being made in the plant is in 5-ft. lengths.

Another interesting feature is that the drives of the #212 and 34" twin tub pug mill are through Louis-Allis "eddy current" couplings. With these electrically operated couplings, it is possible to vary and control both the torque and the speed on the pug mill shaft and auger shaft as well as to vary production rates and provide instantaneous overload protection. The #212 machine has 150 hp connected to the double pug mill and 250 hp to the auger shaft. The #211 machine is equipped with standard motor-V-belt drives through a 150 hp motor on a double pug mill and a 150 hp motor on the extrusion machine.

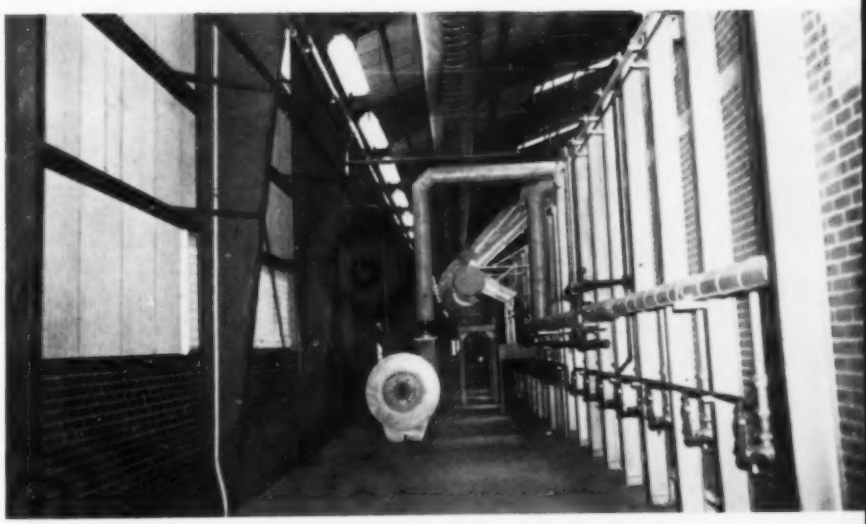
All the forming equipment is housed in an 80' x 380' Varco building with a 30-ft eave height.

Finishing Equipment

After the pipe has been formed, they are finished with Pearne & Lacy finishing equipment and loaded into horizontal racks by specially designed Pearne & Lacy rack loading equipment. One operator on each machine controls the entire forming, finishing and loading operation, while a second man operating a fork-lift truck takes the loaded racks to the drying chambers.

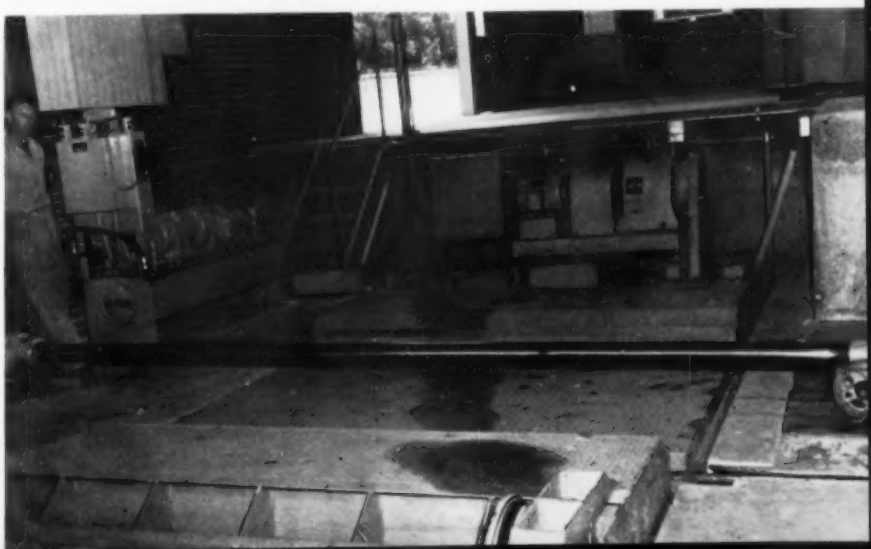
There are four specially designed gas-fired Lanly dryers built to accommodate the production of the

(Continued on page 66)



Above, the Dressler tunnel kiln at the Ocala plant is 465 feet long and is preceeded by a 163-ft. preheater. Natural gas has been made available in a plentiful supply so that no standby system of burning had to be provided.

Below, a Star Foundry Co. hydraulic ram is used to push the loaded kiln car off the transfer car, at the discharge end of the kiln.



Rockford Brick & Tile

Customer Service Spurs Firm's Growth

General view of the Rockford (Iowa) plant. The two new tunnel kilns are housed in the building at the left rear of the photograph.

Two new tunnel kilns mark completion of first phase of modernization program. Future plans include new grinding and forming room.

With the completion of two new Ohio tunnel kilns, Iowa's largest producer and seller of drain tile has just completed the first phase in its modernization and improvement program. The company, Rockford Brick & Tile Co., Rockford, Iowa, made more than six million feet of drain tile in 1960, which accounted for approximately 80% of the production, with the remaining 20% being backup "Speedtile" and floor and partition tile.

The reason for the company's growth is based partly on the service facilities it offers its customers. In addition to three salesmen which the company employs, two drainage technicians are also available for consultation. These technicians will do the surveying of the land and lay out a proposed drainage system for a potential customer. In most instances these proposals are followed with the resultant use of Rockford drain tile.

Plans for completion of the expansion and improvement program are continuing with the groundwork being completed for the installation of a 201 ft. dryer in front of each kiln so that the green ware can be put directly on the dryer-kiln car, instead of having to dry the ware in periodic type dryers, then reset it on the kiln car. Other plans include the installation of a complete new grinding room and the erection of a new millroom with installation of new forming equipment.

Most of the demand for tile in the Rockford area is in the 4-in., 5-in. and 6-in. diameter sizes. With the spring and the fall the peak seasons for laying drainage systems, the company's facilities have to be geared for this type of production. Two months of the slack manufacturing season are devoted to making a year's supply of 8-in., 10-in and 12-in. diameter tile. All diameters of tile are made in 1-foot lengths only.

An Eagle shale planer is used to obtain the raw material for the operation. Delivery to the plant is made by dump truck.

Near Raw Material

Located about midway between Mason City and Charles City, Iowa, the Rockford plant site is conveniently located next to its source of raw material. The clay for the operation is obtained with an Eagle shale planer and loaded directly into a dump truck for delivery to the plant. As the material is dumped into a hopper, grog in the form of crushed tile, which has been crushed to minus 7 mesh, is added to it. The grog accounts for approximately 8% of the total volume of the raw material.

A feeder located under the raw materials hopper delivers the mixed

material to a Williams hammermill which discharges into a bucket elevator for delivery to a set of two electrically heated screens. In extremely wet weather, a 9-ft. Eagle dry pan is used to grind the material along with the hammermill. This dry pan is also utilized to grind and dry scrap coming from the dryers. The discharge from the screens is directly to fine-clay bins.

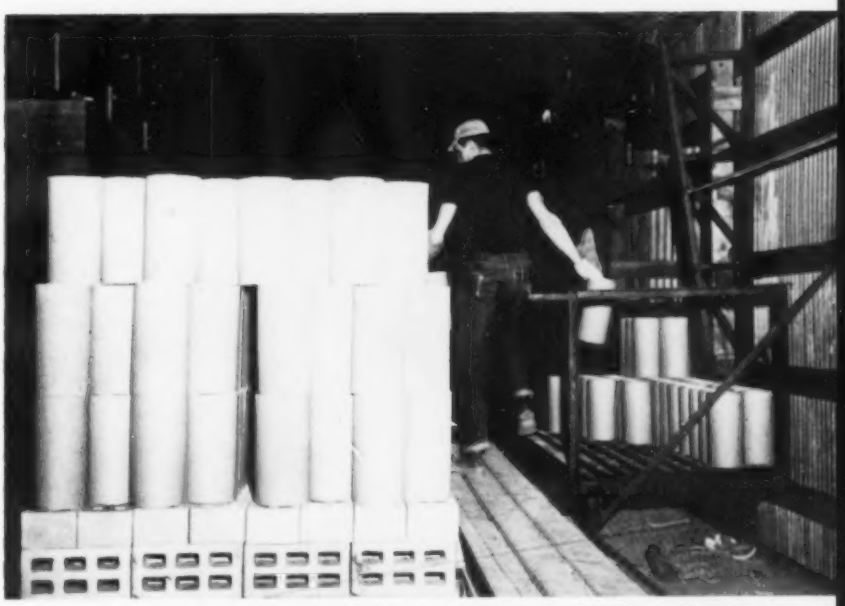
Set 240 Cars

A rotary disc feeder feeds the FRH pug mill. This feeder is also used to feed barium carbonate to the mill. In the mill proper, Kimberly-Clark's Additive A is also added, as is live steam. The FRH machine extrudes the column for the FRH "Benzing" cutter. After the tile are cut, the hacking belt delivers them to the hacking stations where a crew of four men sets 130 tons of ware on dryer cars every eight hours. It requires 240 dryer cars to set this amount of ware, so each man is required to set 60 cars of ware.

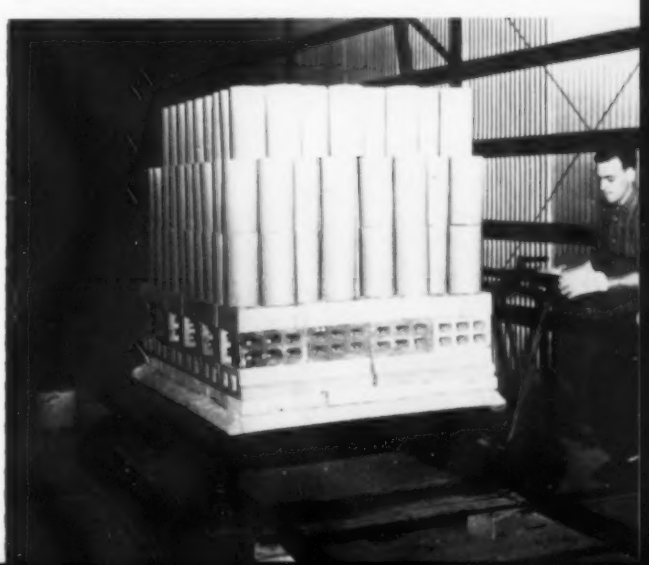
The dryer cars are transferred to a 24-track dryer which obtains its waste-heat from 14 of the 16 periodic kilns still in operation. Ten cars from each of the 24 tracks are drawn from the dryer. Since each track is also 24 cars long, the total dryer cycle is about 2½ days.

From the dryer the tile are transferred to one of two burning operations in the plant. Sixteen 30-foot periodics are utilized as well as the two new tunnel kilns. Because of the

A rotary disc feeder is used to feed the ground materials to the pug mill. This same feeder is also used to proportion barium to the clay.

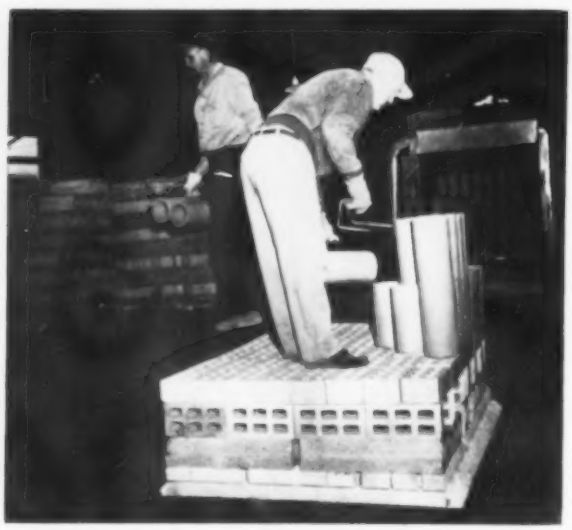


Dry tile are set from the dryer cars to kiln cars 24 hours per day. The two lower courses are "piped" and the top course stepped in to provide a tie.



A manually-operated transfer car is used to transfer the kiln cars from the setting station to the charging end of the preheater, in line with the tunnel kiln.

Each of the two Ohio tunnel kilns is 195 feet long and holds 48 cars, which includes the cars in the 41-ft. auxiliary dryer and 41-ft. preheater.



As in the setting operation, the unloading operation goes on 24 hours a day. Trucks are loaded round the clock so they are ready in the morning to be sent to the customer's job.

All the nine company-operated trucks have an advertising message on the load. Grover Galvin, Executive Vice President, and Edwin Finney, plant superintendent, pose for the camera.

economics of the tunnel kiln, it is expected that eventually 100% of the production will be burned with these units.

The periodic kilns are capable of holding 15,000 pieces of 5-in. tile each and require a total burning cycle of 96 hours, of which 24 are devoted to proper cooling. It is possible to burn 11,000 pieces of 5-in. tile (or 18,000 4-in.) every 24 hrs. in each tunnel kiln. Peak temperature in both operations is 1940° F.

24-Hour Setting

Drain tile for the tunnel kiln operation are transferred from the periodic dryers to a setting station, where they are set on the tunnel kiln cars. The setting operation continues 24 hours a day with one man setting tile each 8-hour shift. The tile are set 3-high, with the two lower courses "piped" and the top course stepped in to create a tie.

To guarantee a supply of absolutely bone-dry brick for the kiln, an auxiliary 41-foot tunnel dryer has been installed in line with each preheater and tunnel kiln to augment the drying power of the periodic dryers. After the tile have been reset from the dryer car to the kiln car, the kiln car is put in this 41-foot dryer to remove the last traces of moisture from the tile. The tile emerge from the dryer at 300° F. Waste heat from the tunnel kiln is used as the source of heat for the dryer, while recirculation in the dryer is provided at 10-foot intervals by direct-driven Ohio Kiln propeller fans.

Natural Gas Fired

Attached to the charging end of each kiln is a 41-foot preheater, which, like the tunnel kiln, is fired with natural gas. A total of 16 burners, 8 on each side of the preheater, is used to boost the temperature of the now-dry drain tile up to 1000° F before they are charged into the kiln. Like the dryer, recirculation of the hot air is provided every 10 feet, and in this portion the air is reheated at every recirculation section.

Each of the two Ohio kilns is 195 feet long and holds 48 cars,* each car being four feet wide and six feet long. The kilns are operated on a 30-minute cycle, so that the total fir-

(*Continued on page* 63)

*Includes 41' Auxiliary Dryer & 41' Preheater.

Sell More Clay Products

Coatings Also Boost Mechanical Strength, Resistance to Atmospheric Attack

By CHARLES W. F. JACOBS
Titanium Alloy Mfg. Division
National Lead Co.

Color has become of importance in the architectural design of today. The brick and structural clay products industry has recently begun to meet the competition of glass and enamels in decorative exterior structure, while still holding its own superiority of product in interior design. In the past 20 years there has been a rebirth in the use of structural clay products in architectural design for their aesthetic values.

The wall and floor tile industry has expanded greatly since the FHA has approved the additional cost of ceramic tile in the so-called low cost homes. The public has chosen the ceramic tile over its organic competitors because of its greater wearing properties and easier maintenance.

The brick and structural clay products industry is in the midst of a very similar advancement today. Glazed brick and tile are in demand by the more progressive architects who are asking for new textures and finishes.

Those of you who now produce glazed brick and tile or other coated structural clay products are interested in improving your material and increasing your sales. Those of you who are feeling the competition of the field are interested in meeting these new products with more interesting and better finishes of your own.

The use of coatings, glazes, and/or engobes, as distinguished from sand or texture finished brick, increases the mechanical strength of the product and through the higher density of the face coating, in many cases, increases the product's resistance to atmospheric attack. In the cities of today this can be of great importance.

Engobes

The engobe can be used successfully to change or improve the color of the clay product on which it is used. However, this is not as simple as it sounds. The application of such a coating can, in subsequent drying and firing, offer many problems to the manufacturer until the "bugs" of the particular operation are all worked out.

The points to be considered when examining the engobe technique are shown in Table I on page 48.

The application of an engobe can be done in several ways: Spraying, brushing, dipping, or rolling. All the normal properties of a ceramic slip must be met, (1) ratio of solids to fluid as a shrinkage control, (2) the use of deflocculants or flocculants to

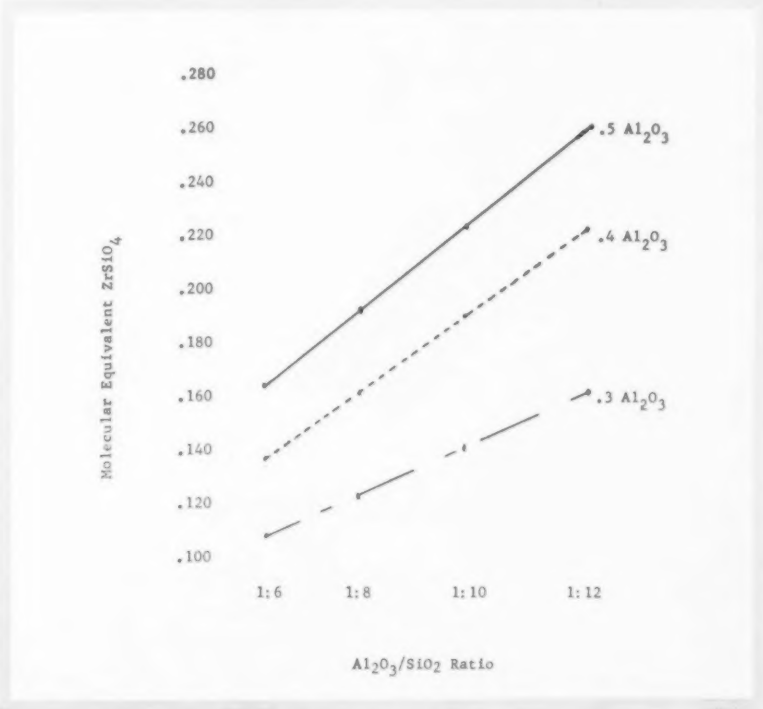


Fig. 1. Effect of variation of Al_2O_3 and/or SiO_2 on mole equivalents $ZrSiO_4$.

TABLE I—Considerations for Engobe Usage

I. Application

A. To extruded column prior to cutting
B. To wet brick
C. To dry brick

II. Drying

A. Airdrying—Natural
B. Airdrying—Forced draft and heat
C. Humidity drying

III. Firing

A. Porous engobe
B. Semi vitreous engobe
C. Vitrified engobe

TABLE II—Slip Compositions of Various White Engobes

	A	Cone 5-7
Feldspar	20-30	
Ball Clay	15-20	
China Clay	15-20	
Flint	20-25	
Whiting	5-15	
Borax	5	
	B	Cone 06-02
Feldspar	15-25	
Ball Clay	10-15	
Flint	15-25	
Whiting	0-5	
Frit (Ferro 3124)	15-25	
TAM Zircopax	15-30	
Borax	5	
	C	Cone 04-1
Frit Ferro 3304	13	
Frit Ferro 3124	7	
Ball Clay	10	
Flint	5	
TAM Zircopax	60	
Borax	5	
	D	Cone 1-4
Feldspar	10-20	
Ball Clay	10-15	
China Clay	5-10	
Frit (Ferro 3124)	5-20	
Flint	10-20	
TAM Zircopax	15-30	
Whiting	0-5	
Borax	5	
	E	
Carolina Stone	33	
Ball Clay	33	
Flint	7	
TAM Calcium Zirconium Silicate	26	
Soda Ash	1	
	F	
Ball Clay	95	
Sodium Chloride	5	

control viscosity and set, as well as assisting in shrinkage control, (3) the ratio of plastics to nonplastics to control fit and shrinkage and (4) texture of product to be produced.

When the slip or engobe is to be applied to a wet extruded column of clay the slip must be: (1) heavy enough to remain fixed on the surface of the column without flowing off or settling to one side, (2) it must dry to an abrasion resistant surface so that handling can be accomplished without difficulty in the drying and setting process, and (3) the slip must have the same shrinkage characteristics as the clay so that the fit is insured.

In addition to the common deflocculants, sodium silicate and soda ash, binders such as lignin, corn syrup or corn flour, dextrin and borax will produce a dry bond and ensure the strength of the dry coating.

The base clay of the brick body when used as a portion of the engobe, assists in "fitting" the coating to the brick or tile. However, this is more easily controlled through the use of plastic and nonplastic raw materials in compounding the engobe.

Clays which contain soluble sulfates may need the addition of two-tenths to one per cent of barium carbonate to the brick body to precipitate the sulfate and eliminate the scumming tendency. This will reduce the tendency of the engobes to peel.

Economically Acceptable

Since structural clay products are not high profit items, the raw materials for these engobes and coatings must be economically acceptable. First grade kaolins and ball clays, which may be uneconomical, in some areas can be replaced by the better grades of light burning fire clay. The colors used in many cases can be ores rather than technical grade metallic oxide, and the color manufacturers in most cases have prepared low cost stains for structural clay product use.

The formulation of a slip for a particular operation is very similar to the compounding of the glaze. However, empirical formulas are rarely used as a means of computing compositions. Instead, the raw materials are selected rationally and blended to produce the type of coating desired in the finished product. In the higher temperature ranges,

cones 5-7, the natural stoneware clays or ball clay with feldspar and flint plus some lime and perhaps zinc produce satisfactory coatings.

However, as the firing temperatures are decreased, in the cone range 04-01, the development of an engobe can be quite complex due to the limiting factors of cost and color desired. White slips, of course, are expensive due to the purity required of the materials. A typical group of compositions for white engobes in several temperature ranges is given in Table II. These engobes are usually ball milled for intimate blending and conditioned with water to the consistency which is suitable for the particular application technique. As you will realize the compositions in Table II are ranges and must be modified for your particular purpose.

An engobe of extremely simple composition such as F is quite reasonable in price. One pound of slip costs 5 to 10 cents and covers an average of seventy brick, resulting in a cost of $0.75/1000 to $1.50/1000.

Checked Surface

When engobes are dipped on the smooth surface of a brick or tile, there is a tendency to produce a checked surface. However, this tendency is markedly reduced by spraying the engobe. If the slip coating is to be applied thickly, it may be necessary to set an auxiliary drier over the column after spraying so that the engobe will be dry enough to cut and handle without soiling the coated surface.

The use of the terra sigilata coating for building materials is described in one of the monthly progress reports of the New York State College of Ceramics, No. 253, July, 1957. This coating produces desirable and pleasing effects. The coatings are weather resistant, durable and impervious to moisture.

The technique, briefly, is to mill 20% by weight of clay with 80% of demineralized water, and a half per cent by weight addition of sodium hexametaphosphate (e.g., Calgon) based on the dry weight of the clay material. The batch is ball milled for four hours and transferred to a settling tank for 20 hours. The fine top fraction, 25-40% by volume, is transferred to drying trays and evaporated to dryness. The dried sigilata is then ball milled for four hours using 30 parts terra sigilata, or sigilata and color, and 70 parts demineralized water. The prepared material has a specific gravity of about 1.15 to 1.2. The slip is then sprayed to a minimum thickness of 0.004 to 0.005 inches and fired to maturity, cone 1-8, depending on the clay used and the color desired.

The advantages of this technique are (1) easy preparation and application, (2) no special handling or cleaning of brick before firing, (3) brick may be stacked on each other during firing without sticking, (4) the process produces a durable coating impervious to moisture and (5) the coatings are weather resistant.

Glazes

Glazes for brick and structural clay products are by no means new. However, until recently they have been the concern of a few companies who specialize in making what used to be called glazed architectural terra cotta. In the early 1900's, large buildings were completely covered with glazed tile including glazed copings and roof.

Today, the interest in glazed brick is growing rapidly and those who can introduce such an item into their plant are doing so and attempting to com-

TABLE III—Primary Reasons for Glazes on Brick and Structural Tile

1. Appearance
   a. Hiding power
   b. Color
   c. Texture
2. Durability of Product's Appearance
   a. Cleanability
   b. Non-staining
   c. Resistance to weathering
3. Improved Structural Durability
   a. Moisture resistance

TABLE IV—Glaze Compositions for Structural Clay Products

Cone 04-05	R-53635A
Lead Bisilicate	136.8
Buckingham Feldspar	89.5
Whiting	20.0
Zinc oxide	16.2
Tremoline Talc	13.2
Ky. #4 Ball Clay	12.9
Flint	4.2
TAM Superpax	51.0

Cone 03-02	R-68644F
Ferro Frit 3124	50
Ferro Frit 3304	50
English China Clay	12.5
TAM Superpax	12.5

Cone 01-2	R-68678B
G 26 Frit	88.20
Keystone Feldspar	74.08
Flint	95.12
Fla. Kaolin	21.84
TiO_2 (Anatase)	2.84
Zinc Oxide	16.24
Calcium Carbonate	31.80
TAM Zirconium Spinel	35.28
TAM Magnesium Zirconium Silicate	35.28

Cone 3	R-68684A-X
Kona F4 Fiedspar	39.8
Zinc Oxide	5.2
Calcium Carbonate	18.1
Quartz	20.6
TAM Zirconium Spinel	6.8
TAM Superpax A	9.6

Cone 5	R-68688A
Keystone Feldspar	28.14
Flint	31.44
Calcium Carbonate	18.05
Zinc Oxide	4.97
English China Clay	6.63
TAM Zirconium Spinel	5.80
TAM Superpax	4.97

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pete in their area of sales with the "imports" of larger companies.

Outside of the art ware field, the glaze compositions for the brick and structural clay products industry are possibly the most difficult to be specific about due to the effect which the body has on the glaze.

The glazes for brick and structural clay products may be divided into two general classes: 1-fire and 2-fire types. The 1-fire glazes are those applied to the raw unfired body and matured with the body in a single firing. The 2-fire types are applied to bisque brick and require a second or glaze firing.

The brick setting techniques and firing requirements in most cases limit the area in the kiln where the glaze brick may be placed. The glazes with few exceptions require an oxidizing or neutral atmosphere which is free of ash particles. To avoid sticking, the brick must be so set that the glaze faces are not touching anything, and the firing temperature should be quite uniform, having a variation of less than 50°. A shuttle kiln or small tunnel kiln is ideal for the production of this type of product and conversely a scove kiln is virtually useless.

The glazes for single firing must have shrinkage characteristics suitable to the raw body, so that as final drying and firing occur the glaze will shrink with the body, and not peel off before the incipient fusion of the glaze produces adherence. This can be best controlled through the use of the proper clay additions to the glaze. For instance if the body has relatively high drying and early firing shrinkage, a plastic type of clay with high shrinkage should be used. If the drying and firing shrinkage of the body is low, kaolins or calcined clay may be used in the glaze. In many cases it has been found that good control of this factor can be achieved by using the clay of which the body is composed in the glaze.

Consider Adherence

Adherence is another physical factor to be considered in the glazing of structural clay products. By this I mean the adherence of the applied glaze to the body prior to firing. Here it is necessary, because of the handling which the brick or tile receives, to create a hard durable, non-dusting, non-flaking, raw glaze surface. This is achieved through the addition of gums and binders such as dextrin, gum arabic, corn syrup, sugar, lignin, etc.

The fired properties of the glaze for structural clay products are the same as those for any other ceramic products. However in most cases a greater variation in texture and gloss are permitted and clear glazes are the exception rather than the rule.

Let us then consider why we put a glaze on a brick or structural clay product, so that we can begin to evaluate the type of glaze that we shall use. See Table III, page 49.

Of these requirements hiding power is the most essential, since in a dark colored brick the glaze must be sufficiently opaque to hide body tone and make a range of light to dark colors available. Procurement of a reasonably opaque glaze economically, is one of the first aims of the ceramic engineer in this problem. Here the zircon and zirconia products fit very well. Other opacifiers such as tin oxide and antimony, while still good opacifiers in other fields, are more expensive and no better than the available group of zircon or zirconia opacifiers.

Most authors have discussed the use of zirconium compounds in glazes, as per cent batch additions, or as molecular substitutes, into already developed glazes, replacing alkaline earth oxides and zircon. Few have ever used the molecular notation of $ZrSiO_4$ (zircon) with the opacifying phase constituent.

Effects of Alumina and Silica

During an investigation of zirconium opacified glazes, it was noted that when the alumina content with fixed silica was increased and/or the ratio of silica to alumina increased, the glaze became more opaque. Since the zircon opacifier was being held constant as a weight per cent addition, calculations were made to put the $ZrSiO_4$ on a molecular basis for purposes of comparison. It was immediately found that as the molecular weight of the glaze increased due to the increased molar amount of alumina and/or silica, the supposedly uniform per cent oxide addition of zircon increased as a molecular equivalent.

If, as an example, a single glaze is used holding the zircon as a constant weight per cent addition to the glaze batch, but varying the alumina and/or silica content of the glaze, the data as presented in Figure I shows quite clearly the change in zircon content which takes place in the molecular formula.

As the molecular equivalent of Al_2O_3 is increased from three tenths to five tenths, or the silica increased in the alumina silica ratios from 6-12, the molecular equivalents of zircon produced by the "constant" 10% by weight addition to the batch, increases.

From a comparison of the opacity of a large group of glaze compositions it is apparent that if the glaze is satisfactory from a standpoint of gloss and texture, the opacity is directly related to the mol equivalents of zircon contained in the glaze. The mol equivalents of $ZrSiO_4$ in glazes of similar composition and firing range, determines the relative opacity achieved.

The result of this survey of glaze compositions comparing $ZrSiO_4$ contents on a molecular basis with the opacity, produced the following general schedule:

0.000-0.150 mol equivalents $ZrSiO_4$ produces semi opaque glazes

0.150-0.250 mol equivalents $ZrSiO_4$ produces moderately opaque glazes

0.250-0.350 mol equivalents $ZrSiO_4$ produces opaque glazes

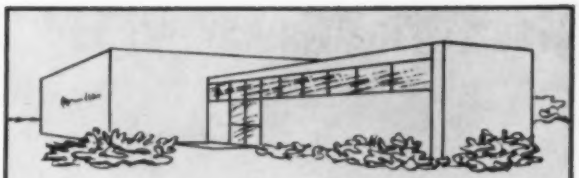
0.350-0.450 mol equivalents $ZrSiO_4$ produces super opaque glazes.

Important Considerations

It is important in developing zircon opacified glazes or revamping present composition to remember (1) the opacifying crystalline phase in zirconium type glazes is zircon and (2) that the opacifier content of the glaze be considered as a part of the empirical formula and not as a per cent batch oxide addition.

The only successful method of determining the relative opacity of the glaze is to view the fired glaze over a dark colored body. To examine a white glaze over a white body can result in erroneous evaluations of the true opacity of the glaze. In a few cases when a very clean white body is used, a clear glaze, due to its transparency, may appear to be white, therefore more opaque than a glaze containing an opacifier addition over a dark colored body.

(*Please turn page*)



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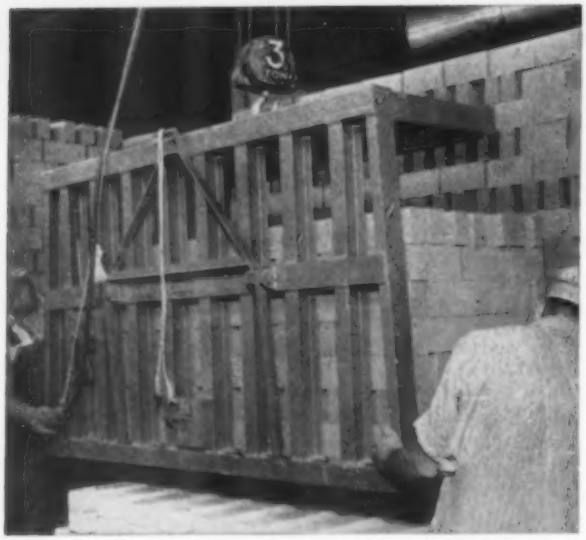

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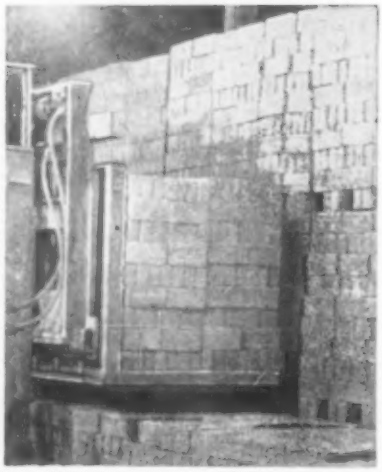

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(*Continued from page* 51)

However, tinting strength, the ability of an opacifier to tone a colored glaze, may be evaluated most successfully over a white body. In this way, with carefully controlled spray application, the ability of an opacifier to produce a pastel color can be most readily observed. Where color matching is a definite requirement color stability may be attained by first achieving maximum opacity, and then adjusting the desired color value with the glaze stain.

The other properties, such as color and texture, can be improved through the use of the same various zirconium type opacifiers known as synthetic silicate opacifiers. These synthetic silicate opacifiers are compositions in which various basic elements are combined with zirconium silicate to assist in producing opacity more effectively than when the constituent compounds are used separately.

Zirconium Spinel

Zirconium spinel opacifier is most generally useful with the synthetic zirconium silicates for all purposes. It definitely favors a bright texture and clear white color even when blended with other zirconium opacifiers. It has the unusual property of widening the firing range of the glaze. It very definitely aids in preserving bright finishes through a wide range of firing. It can be used in a great variety of glaze compositions because of its novel stabilizing influence. Perhaps its most efficient use as an opacifier is in the low temperature class 08 to cone 1.

The use of *calcium zirconium silicate* in a glaze produces results quite different from those obtained with whiting and TAM Zircopax or TAM Superpax. It is extensively used in glazes in the higher temperature range cones 5-12. Generally it is used as the sole opacifier but may be blended with other zirconium products to obtain special finishes. In lower temperature glazes cones 04-2 it may be used for controlling matt finishes in zinc free compositions.

Barium zirconium silicate is an effective zirconium opacifier when used in small amounts. Because of this it is usually blended with other zirconium compounds in a glaze. When used in larger amounts, for instance .2 mols BaO equivalents or more, devitrification is liable to occur.

Magnesium Zirconium Silicate

Magnesium zirconium silicate is an efficient zirconium opacifier especially where high opacity, good color and softness of texture are desired. It is much better than calcium zirconium silicate for matt finishes. Blended with zirconium spinel, it produces blend textures. It has exceptional properties for textural control and low temperature range matt glazes. It is a means of introducing MgO without serious devitrification. A minimum amount of opacifier goes into solution when this product is used.

Zinc zirconium silicate is a unique zirconium opacifier which is ideally suited for art ware or lower temperature glazes where moderate opacity and color brilliance are desired. It is generally blended with other zirconium products in medium and high temperature glazes. It will produce a good brightness with moderate opacity when used alone in glazes above cone 6.

Some mention has been made of blending or using two or more of these syntehtic silicate opacifiers in a single glaze. In many instances this practice has been of considerable value making it possible to utilize the combined benefits of the double silicate opacifier. Blended synthetic zirconium silicates and perhaps zircon products seem to improve the glaze slip properties so as to afford more trouble-free application.

A group of glazes which have shown promise on structural clay products is shown in Table 4. These glaze compositions range from cone 05 to cone 5 and are opaque to semi opaque. They are recommended only as starting points, for the development of glazes for brick and tile.

Sand Finished Brick

Sand finished brick had been produced by the industry for many years. The sand finishing, in soft mud products, was the result of sand coating the molds to provide a release vehicle for the soft clay product. As time continued various coloring oxides were added to the sand to improve the color of the fired product.

The sand finishing of stiff mud brick has afforded the brick industry with an improved line of color.

In the western New York area, the Buffalo Brick Co., whose plant at West Falls, N. Y., produces a red shale brick has designed and developed a machine for sand finishing brick which is unique in its simplicity and small size.

The machine sits over the column directly ahead of the extruder. As the column is extruded, the face and edge surfaces receive a light spray of water before passing into the sanding unit. After coating, the column is cut and brick are placed on dryer cars with coated faces in contact with one another.

Carries Coloring Oxides in Air Stream

For this operation the sand may be considered a vehicle which carries the finely powdered coloring oxides in an air stream. The air pressure for facing flat and matt surfaced brick is about 35 lbs. per sq. inch while the textured brick (rug, vertical scored, etc.) are dusted using an air pressure of 8-12 lbs. per sq. inch. The ratio of sands to oxides vary for these two types of surfaces also. The fine surface brick are finished using 99-93 parts of sand to 1-7 parts of oxide while the textured brick are dusted using 90-80 parts sand 10-20 parts oxide.

In both these techniques facial additions in the form of a fine fire-clay, may be added replacing part of the sand in order to obtain a contrasted light colored speckled surface. The sand used in this operation is a crystal quartz silica produced by Ottawa Sand Co. The oxides are milled rutile, Zircopax, zinc oxide, manganese dioxide, ferric oxide, chrome ore and buff body stain. The shading of the brick is varied by the amount of oxide used in the sand blasting mixture.

Buffalo Brick produces about 18 shades in earth tones ranging from almost white, using zinc oxide or Zircopax to an almost black color with chrome ore and manganese dioxide.

The cost of this coating operation is estimated by Buffalo Brick in the order of $1.25 per thousand brick, including coloring oxide sand, and labor. The cost of purchasing such a unit from Buffalo Brick is about $1,100.

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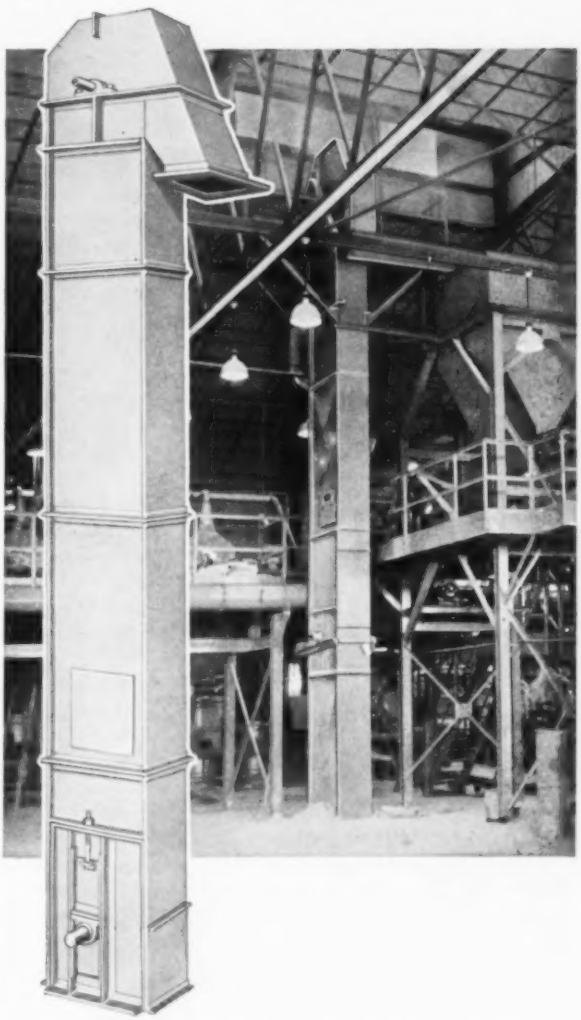

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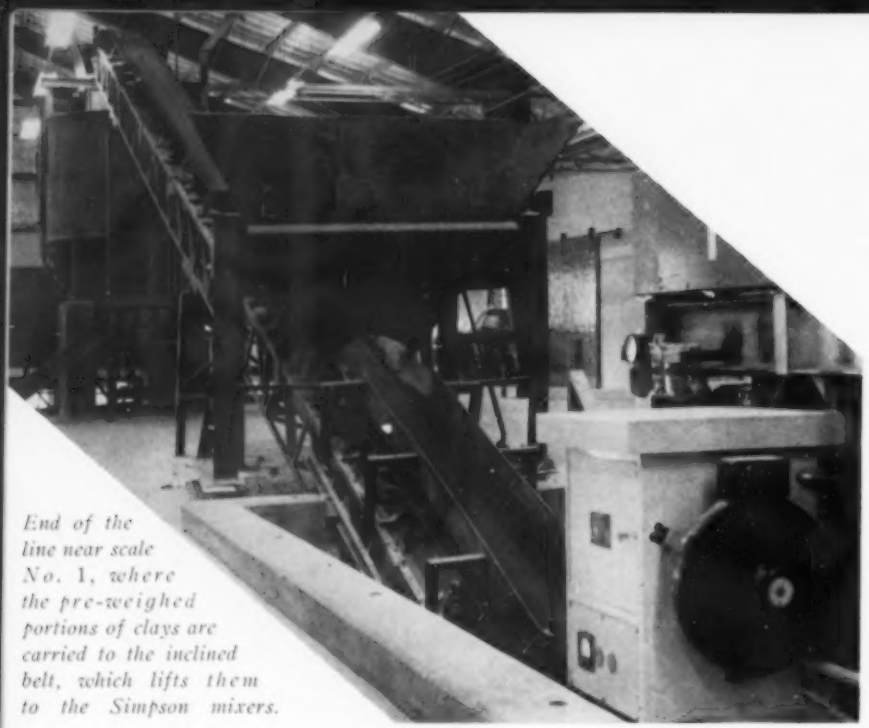


End of the line near scale No. 1, where the pre-weighed portions of clays are carried to the inclined belt, which lifts them to the Simpson mixers.

One of the nation's oldest manufacturing concerns still operating at its original site is the Valentine Fire Brick Co., of Woodbridge, N. J. Completely rebuilt after a disastrous fire had wiped out most of the facilities in 1956, the new plant is perhaps the world's largest and most efficient for production of its specialty: Semi-silica refractory brick.

This division of the A. P. Green Fire Brick Co., was founded just prior to the Civil War, and its present location was chosen in 1865 because of the abundance of semi-silica New Jersey fire clays in the area. Even today, most of the raw clays are mined within a 5-mile radius of the plant. Mining is discontinued during the winter months, from November 15 to April 1 because of higher costs, and no mining is done on rainy days because of the possible contamination of the clay. The famed Jersey fields yield several distinct varieties of clays with varying silica contents, and these are brought to the plant, are crushed and screened, and stored under cover in individual bins.

The storage area permits sufficient stockpiling to carry the plant through the non-mining season. Each bin has an open end, at which trucks discharge their loads, and a power-operated overhead door at the opposite end, opening into the plant proper.

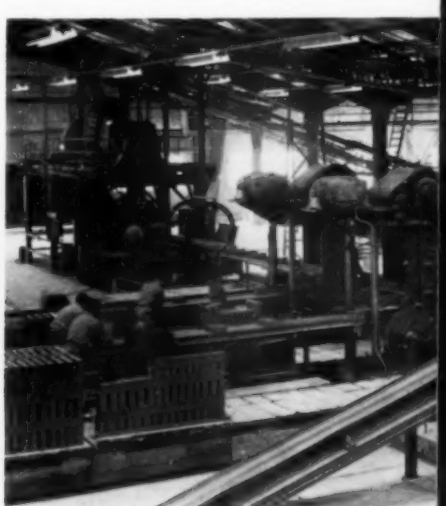
Within the plant, a single front end loader fills its ¾ yard bucket from any of the bins and empties it into one of eight surge hoppers feeding the Thayer automatic batching scales. The scales, part of a complete weigh-batching system by Thayer Scale Corp., of Pembroke, Mass., are installed in a line parallel to the row of doors leading to the storage bins, so that each scale is conveniently located near its bin.

Following a "recipe" or formula printed on a laboratory card for a particular type of brick, the foreman sets each of the scales for a predetermined amount of the particular material which it will apportion to the mix. The proportions may vary from 25 lbs of one ingredient to 1000 lbs of another. The operator of the front end loader need not be concerned with proportions, only with keeping the hoppers filled.

Each of the eight batching units consists of a vibratory feeder which fills a 360° rotating type 15 cu. ft. weigh hopper through a 2-speed system: fast bulk flow and dribble flow.

The operator's work station is on a high platform atop the muller mixers, where a master control panel is

Thayer Scale batch-weighing system. Equipment recycles automatically and is impervious to abrasive dust.



Weigh Batching Speeds Firebrick Production

Only Two Men for All Loading, Weighing, Batching, Mixing

located. He starts a new batch simply by operating pushbuttons, which activate the scales. The clays are bulk-fed into the weigh hoppers at an initial rate of 45 lbs per second (unless only a very small amount has been preset on the scale). As the portion approaches correct weight, the vibratory feeder automatically slows down and the final few pounds or ounces are dribbled into the hopper until the scale is in balance. This feature permits an unvarying accuracy of ± 1% of the total set on each scale, and maintains a speed of no more than 2 minutes per weighment. At top production speed, the system can start a new batch approximately every two minutes.

While some batches may require as many as eight different ingredients, others may call for only six, or even fewer. In such cases, the system may be operated with a fewer number of scales, or all eight scales may still be used by assigning one ingredient to two or more scales, where the apportioning is shared.

Regardless of how the batching is set up, an automatic interlock prevents the Thayer system from dumping the weigh hoppers until all scales have come to balance. This prevents an incomplete batch from being dumped onto the collector or take-away belt beneath the scales, and guards against electrical or pneumatic breakdowns, or malfunctions anywhere in the system. When all scales have weighed out their preset quantities, a manual or automatic signal causes them to dump each in turn onto the belt, which carries the ingredients up into the Simpson mixers.

Because of this arrangement and equipment, the operator of the front end loader and the mixing operator on his high platform constitute the entire crew for all processes from storage up to the delivery of the wet mix to the pug mills and auger extrusion machines. This same work prior to the installation of the automatic weigh batching system required five men, without the high speed and precise quality control of the present arrangement.

The company made a detailed survey of the market for industrial weighing equipment before selecting the Thayer units. The choice was based not only upon the precise accuracy and fast cycling speed of these scales, but upon their unique construction which eliminates all knife-edge pivots. The weigh-beam which supports the hopper, and all subsequent levers in the system are supported or hung on patented flexure plates, which transmit the load through infinitesimal flexing motion. The weighing mechanism is therefore virtually free of any wearing parts,

(*Continued on page* 70)

Left, mold-press operation at Valentine Fire Brick Co.

Right, front end loader keeps feed hoppers filled with eight types of clay, which are automatically apportioned to each batch by Thayer Scale system.

Whitlock Tells Manufacturers:

Fight for Fair Depletion Rules

Outstanding Speakers Address Southern Groups in First Joint Meeting

The time has come for the structural clay products industry to take a firm stand on the issue of depletion percentages, stated Douglas Whitlock, board chairman of the Structural Clay Products Institute, at the first joint meeting of the Southern Brick and Tile Manufacturers Association and the Mississippi-Louisiana Brick and Tile Manufacturers Association, held recently at Point Clear, Ala.

Whitlock discussed the history and current efforts to obtain fair depletion percentages for the industry and added, "An inequity exists in the brick industry insofar as the percentage allowance presently honored by the Internal Revenue Service is interpreted. Depletion allowances can mean the difference between existence of the industry over the long haul and complete depletion of our natural resources with no chance of recovery of valuable clay deposits . . . The industry must be prepared to present our viewpoint to the Congress of the United States."

The SCPI chairman was one of several noted speakers on the program. Paul V. Johnson, deputy director, Structural Clay Products Research Foundation, Geneva, Ill., presented the latest data on research and development in the brick industry. Johnson stated, "The panel construction of the Hirsh Clothing Co. building in Chicago can be considered an unqualified success. The fabrication of the panels proceeded without delay and the actual erection time was comparable to any other building material presently fabricated into panels."

Panel Idea Considered Sound

Reviewing the history of this project, Johnson said the idea of using a burned clay product prefabricated into a panel was considered sound. Proceeding with the basic assumption, the panels were assembled in jigs using a quick setting mortar and then removed for curing. The panels were then assembled into steel frames and transported to the job, and placement made to conform to the architect's folded plate design. Other research developments were discussed.

Dean Harlan McClure, College of Architecture, Clemson College, spoke on the educational program of the industry for architectural students and offered a complete evaluation of the training aids and material made available to the colleges of architecture by the industry.

An interesting challenge to industry was presented by McClure. It dealt with the development of an architectural student competition among the various colleges of architecture in the southeast. Stressing the importance of permitting the student architect to work with proven building materials such as brick and tile, McClure stated that "architectural education would be immeasurably improved and the student architect a more capable practitioner when entering his profession." Suggested competition included the design of structures utilizing brick and tile to be juried and prizes awarded on a southeastern basis among some 10 colleges of architecture.

Prof. G. C. "Gil" Robinson, head, Department of Ceramics, Clemson College, presented a series of interesting student solutions to some of the complex problems involved in the

The new president of the SBTMA, J. D. Henry, Henry Brick Co., Selma, Ala., enjoys a social evening with Mrs. Henry.

Mrs. Larry Dantzler has dinner with her husband, Larry Dantzler, Cherokee Brick and Tile Co., Macon, Ga., and past president of SBTMA.

manufacture of brick and tile. Citing one basic defect, commonly found in brick, a solution to eliminate this defect was invited from a group of nine students. Nine different solutions were presented for critique and each solution was valid and did bear upon aspects connected with possible solutions to the problem. The entire presentation was utilized to point out problems of the industry and the need for more basic research in the ceramic field and perhaps a different approach to teaching the student complex problems of the industry.

Brick in Australia

A. P. Steele, Jr., J. C. Steele and Sons, brick machinery manufacturer of Statesville, N. C., discussed the manufacture and marketing of brick in Australia, Pointing up the difference in techniques used in Australia, Steele stated, "Brick production is perhaps 50 years behind the advanced methods used in the United States. Production of burned clay products lags well behind the demand and the manufacturers enjoy a seller's market at the present time. Architectural trends include the use of brick in design and construction. Concrete as a building material does not enjoy the popularity or use as is prevalent in the United States."

Jack Clark, director of promotion, Structural Clay Products Institute, Washington, D. C., outlined the 1961-62 national promotional program. Greater emphasis will be placed on the homebuilder market and the architectural market. In addition to these markets an entry will be made into the school and mortagage lender fields. National advertising in consumer and trade publications will be continued and in some instances accelerated.

Install Henry As President

Preceeding the general meeting, the board of directors of Southern Brick and Tile Manufacturers Association installed President-Elect J. D. Henry, Henry Brick Co., Selma, Ala., as the new head of the organization of brick manufacturers of the states of Alabama, Georgia, Tennessee and South Carolina. The Mississippi-Louisiana Association includes members in the states of Mississippi and Louisiana. This date marks the first annual meeting of the two groups.

Enjoying a coffee break during the day's activities are: (left to right) Herb Fuller, Bickerstaff Clay products Co.; Richard Zachry, Bickerstaff Clay Products Co., Columbus, Ga.; J. D. Henry, Henry Brick Co., Selma, Ala., and John Segnor, Thrower Brick Co., Atlanta Ga.

Always a cheerful couple, Mr. and Mrs. Bob McIntosh, (right) A. P. Green Fire Brick Co., Macon, Ga., have dinner with Kenneth Dunwody, Jr., Cherokee Brick and Tile Mfg. Co., Macon, Ga.

Discussing the days proceedings are: Mrs. James A. Lee; Jack Carney, executive secretary, Mississippi-Louisiana Association; Mrs. Jack Carney, and James A. Lee, SBTMA Executive Director.

Taking time out from dinner to pose for our cameraman are "Dut" Isenhour, Sanford Brick and Tile, Sanford, N. C.; Miss Thana Isenhour; Mrs. Walter Hopkins, and Walter Hopkins, staff member, SBTMA, Atlanta.

Your Questions Answered

Should You Buy Equipment--

Leasing is a method of obtaining the use of income-producing equipment without capital investment. It is becoming increasingly popular in industry for a number of reasons which are set forth by our author. If you have been thinking about leasing and have questions on the subject, chances are you will find your answers in this article.

By **ROBERT SHERIDAN**
President, Nationwide
Leasing Co., Chicago, Ill.

1. What is the volume of equipment leasing in the ceramic industry?

In 1960 there was approximately $8.5 million worth of production and office equipment leased by ceramics producers, a 12-month increase of 157 per cent. This included crushers, hammermills, cutters, mixers, shovels, lift trucks, packaging equipment and machines, conveyors, office equipment, and more. A major factor in the increase in dollar volume in 1960 was the fact that a number of producers negotiated sale-leaseback transactions whereby they generated fresh working capital on their existing plant and equipment.

Major reasons for the growth of leasing in this industry are: (1) expansion of the industry in the past decade has strained the working capital resources of growing companies, (2) the need to modernize and upgrade equipment is limited by the increased cost of machinery, (3) the need to hold costs down creates pressure for using new equipment, and (4) unrealistic government depreciation schedules make purchase of new equipment difficult.

2. What is the volume of equipment leasing by American industry?

In 1960 American industry leased $530 million worth of equipment. This does not include autos, trucks, or railroad rolling stock.

3. What is equipment leasing?

Equipment leasing is a method of obtaining the use of income-producing equipment (fixed assets) without capital investment. When equipment is obtained in this way for use in production, the units remain the property of the leasing company, but are used by the lessee, who pays the leasing company a fixed charge for a stated period for using the equipment. Leasing is a long-term arrangement, normally from three to 10 years, though in some cases it may be as little as two years or as long as 15 years. It is different from equipment *rental* which is a short-term affair, in which the rental firm rents out new or used pieces for a brief period, reclaims them at the end of the period, and then rents the equipment to other users.

4. How does equipment leasing work?

A company which wishes to lease equipment from Nationwide Leasing Company, for example, submits an application describing itself—its business, its financial position, etc. It lists the specific manufacturer from whom it wishes to secure the equipment, the price of the equipment, the length of the lease terms it desires, and the form of payment it desires. The leasing company then purchases the equipment and arranges for its shipment directly to the lessee's plant or store. Upon acceptance of the equipment, payments start. All equipment, no matter how many items are involved, can be covered by a single master lease and can be paid for in a single monthly payment. This is true regardless of how many suppliers are involved. This reduces the user's bookkeeping considerably.

5. What types of equipment are leased?

All types. In 1960, equipment leased ranged in cost from a $17 hand truck (part of a $140,000 equipment lease with a midwestern hospital) to $5,000,000 worth of construction equipment. Both standard and specially-built units can be leased.

6. Why has equipment leasing increased so rapidly?

Basically, equipment leasing has increased as a result of the steadily increasing cost of capital equipment. Leasing has historically been a means of permitting businessmen to function without owning everything they need to do business, since profits are made by *using* capital equipment, rather than *owning* it. Specific reasons for the current growth of equipment leasing are:

1. Profit-producing equipment is put to work without capital investment. This is particularly important since working capital remains tight, despite the slight improvement resulting from inventory liquidation.

2. To increase profits without increasing a company's own capital investment.

--Or Lease It?

3. To increase production without reducing liquidity of working capital.

4. To reduce the risk of loss caused by rapid obsolescence of specialized equipment.

5. To obtain equipment for limited-term use, either for special orders or for developmental or research work. This is particularly important where firms are involved in defense contract work.

6. For manufacturers of industrial equipment, leasing programs have proved to be an effective method of increasing sales.

7. What are the advantages of leasing?

Other advantages to users of leased equipment, in addition to those cited in the answer to Question 6, lie in how leasing improves a company's financial situation.

1. Leasing offers financing without dilution of ownership or control.

2. In leasing, there is no necessity for a periodic cleanup of funds or a pledge or receivables.

3. Leasing may offer certain tax-timing advantages in specific instances.

4. Leasing makes for a cleaner balance sheet. Only the lease payments due within 12 months appear on the balance sheet, thus affecting the ratio of current assets to current debt very little. As a result, a company is able to use its established lines of credit for short-term borrowing without disturbance.

8. What types of companies lease equipment?

All types of companies in virtually every industry today lease equipment. They range in size from quite small companies (restaurants and motels, for example) to giant companies in the billion-dollar-a-year sales category. According to Nationwide Leasing Co.'s annual surveys, the 10 leading industries using leased equipment in 1960 were nine manufacturing industries and the supermarket industry. They are (in alphabetical order): aircraft and parts; chemicals and drugs; construction and road-building; electrical equipment and machinery; fabricated metal products; food products; petroleum refining; printing and publishing; pulp, paper, and allied products; the supermarket industry. This year marked the first time a non-manufacturing industry (supermarkets) was ranked among the top 10 users of leased equipment.

9. What is the length of equipment lease terms?

Terms range generally from three to 10 years or longer, though in some cases, where smaller sums are involved, they can be as little as two years. The user determines the length of lease he prefers, arranges the payments to suit his own needs. Leases are usually written on a uniform payment basis although they can be written on straight line, declining balance, sum of digits, or others.

10. Is equipment leasing useful as a sales tool for manufacturers of production equipment?

In a number of industries, leasing programs have proved to be an effective method of increasing sales, through offering customers the option of purchase or lease—with the leasing company assuming the lease contract and paying the manufacturer 100% cash for the equipment when the equipment is delivered. Nationwide Leasing Co., is the leading specialist in this particular leasing field.

(Please turn page)

What It Costs To Lease*

Equipment	Price	Monthly Charge 3-Year Lease	Monthly Charge 5-Year Lease
Crusher	$ 8,000	$245 to 260	$156 to 180
Hammermill	13,000	397 to 433	254 to 292
Dry Pan	21,000	643 to 699	411 to 472
Feeder	2,300	70 to 76	45 to 51
Auger Machine	17,400	533 to 579	341 to 391
Pug Mill	4,700	144 to 156	82 to 105
Cutter	5,800	177 to 193	113 to 130
Press	22,000	674 to 732	430 to 495
Mixer	1,900	58 to 63	37 to 42
Screen	1,100	33 to 36	21 to 24
Shovel	19,000	580 to 630	370 to 420
Lift Truck	5,200	159 to 173	101 to 117
Packaging Machine	31,000	950 to 1,032	606 to 697
Kiln Car	1,000	31 to 33	20 to 22

*NOTE: These are the rates for medium-sized companies with good credit standing. Rates are shown in minimum-maximum ranges because of fluctuations in interest rates resulting from operations of the Federal Reserve System.

According to our chart, a dry pan carries a price of $21,000, but can be leased for as little as $411 per month.

The leasing company sets up a complete sales training program for the manufacturer so that his leasing plan will have maximum impact.

In merchandising-leasing plans, leasing is used as a primary sales tool, giving the manufacturer's salesmen an important new way to move goods. The customer has the benefit of the lease—the manufacturer has a cash sale. Not only does this normally enable a manufacturer to increase his sales by the added leasing volume, but the interest generated around the leasing plan results in opening new markets for the product and inevitably results in increased direct sales, often greater than the leasing volume.

11. How does leasing compare with other methods of financing?

Leasing offers 100% financing and provides the ceramics producer with greater cash flow than any other financing method. As a result, the relative cost of leasing is less than other methods. Any expenditure of money to acquire equipment involves paying something for the use of the money. Even in the case of outright cash purchase, the manufacturer is sacrificing the earnings that his working cash would yield; this, in effect, is what he is "paying" for the use of his own money. In the ceramics industry this means an average "cost" of 34%—the average *before-tax* rate of profit on *net working capital* the industry has earned for the past five years.

Leasing frees more working capital immediately than any other method of obtaining equipment. This cash excess earns profits for the ceramics producer at his company's normal rate for the life of the lease. Over the term of the lease the additional profits produced by this cash excess (at even less than the average rate cited above) will be so great that the relative cost of leasing will be lower than other financing methods. (A complete analysis of the comparative cost of leasing and other financing methods, entitled "The Pros and Cons of Leasing," has been developed by the Foundation for Management Research. Single free copies may be obtained by writing to the Foundation at 121 W. Adams St., Chicago 3, Ill.

12. What are recent trends in leasing?

Two new trends have shown themselves: (1) the sale-leaseback transaction (commonly, but erroneously, termed purchase-leaseback) and (2) merchandising-leasing plans involving the cooperation of equipment manufacturers and a leasing company to increase sales.

In the sale-leaseback transaction, a company builds a new plant, sells the equipment and facilities to the leasing company as soon as it is completed and ready for use, and immediately leases it back. *Often this is done with older plants also.* This enables firms whose financial ratios would not otherwise permit them to expand at so great a rate, to do so without straining their capital structure.

13. What operating situations make leasing most advantageous?

a. In general, where companies can expand their operations profitably, if additional equipment and machinery were made available at smaller annual expense than through use of their own capital.

b. Companies which find themselves short of working capital but which have sufficient equipment,

(*Continued on page* 62)

Leasing costs on lift trucks may run from $101 to $173 per month, depending on the term of the lease.

A single bead of AC-DC Borod on leading edge of this auger flight increased life 300 to 400% over the conventional hard-facing technique.

STOODY BOROD HOLDS AUGER EDGES LONGER

Triples auger life, reduces downtime, eases extruder starts, cuts power requirements!

In a California brick plant, trouble was experienced starting the extruder after an overnight shutdown. Investigation traced the problem to a peculiar wear pattern developing on the outer edges of the auger flights. Normally, auger faces and gauges were hard-faced, but with the abrasive material processed this method allowed the flights to thin down on the outer edge. Clay then packed tightly between the wear-tapered flight edge and the extruder housing. Result? Balky starts, a hot-running thrust bearing and an overloaded motor.

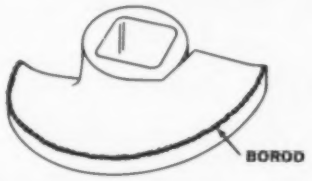
To overcome this difficulty, the weldor changed his hard-facing technique on new augers. A single, hard-metal bead was applied to the leading corner of the flight edge. This procedure held corner size and allowed wear to dish the flight from gauge to hub, as well as scour the surface. Packing of clay between auger and housing was thereafter eliminated.

A 15% to 30% saving in power was gained and the extruder started readily after shutdowns. Average runs between auger changes increased from 60,000 to between 200,000 and 250,000 bricks! Augers have been rebuilt as many as five times.

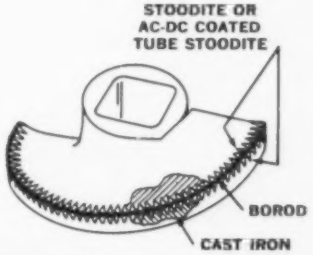
The Stoody Guidebook gives data on many more equipment-saving applications. Ask your Stoody Dealer for your free copy (check the Yellow Pages) or write direct.

STOODY COMPANY
11950 East Slauson Avenue
Whittier, California
Circle Service No. 33

HARD-FACING PROCEDURE



NEW AUGER: Apply a single bead of 3/32" AC-DC Borod to the corner of the leading flight edge.



WORN AUGER: Build-up severely worn face of cast iron augers with cast iron electrodes, then apply a bead of 3/16" Stoodite or AC-DC Coated Tube Stoodite on both gauge and leading face. Follow with a single bead of Borod welded on corner between the two Stoodite beads.

NOTE: Always pre-heat cast iron augers 2-3 hours to a "black" red before hard-facing. After hard-facing bring to a higher oven heat. Soak 2-4 hours and slow cool to prevent checking or breaking. Touch-up damaged deposits after installation to prevent cut-outs.

Leasing . . .

(*Continued from page 60*)

can remedy the situation through sale-leaseback transactions.

c. Companies faced with competition that is using the latest equipment, while they themselves lag on cost-saving. In this situation, acquiring the new equipment is essential, but often a large initial cost is prohibitive. In this situation, leasing can often provide the solution.

d. Companies which hold a tight check rein on capital expenditures and financial ratios. Leasing permits the management of these companies to secure new equipment without forcing the board of directors to raise more capital.

e. Where rapid obsolescence is a strong possibility, leasing bypasses the problem of capital investment in such equipment.

f. For pilot plants, developmental or experimental projects, leasing offers a means of opening new areas of production without draining working capital on such unproved ventures.

g. Companies engaged in defense contract work are often enabled, through leasing, to obtain needed equipment for the term of the contract. In this way capital is not frozen in equipment which may not be useful after the contract has been fulfilled.

14. Do leasing agreements contain purchase options?

Yes, leasing agreements can contain purchase options. However, Nationwide Leasing Co., advises against including purchase options in the leasing agreement. The reason is that a purchase option generally converts a leasing agreement into a conditional sales contract, in the eyes of the Internal Revenue Department. There are some exceptions to this general rule, but these exceptions are uncertain and depend on specific rulings by the Internal Revenue Department at the conclusion of the contract, many years later. For this reason, purchase options are not recommended. True lease payments, as differentiated from disguised conditional sales contract payments, are legitimate deductions as operating expenses. Conditional sales contracts are deductible only at the rate specified in the federal government's depreciation schedules.

15. Do leasing contracts contain renewal options?

Yes, of course. In leasing, the cost of the equipment is paid for entirely in the original leasing term. Renewal options are usually available at extremely low cost. They can range in length from one-year options to indefinite terms.

16. Does leasing offer companies tax advantages?

This has been an area of much misinformation. Leasing is not a method of tax avoidance; its primary value lies in the way it frees working capital for other uses. In certain specific situations leasing may also offer companies advantages of tax-timing which is not to be ignored. Leasing charges are legitimately deductible as business expenses. As such, they reduce taxable income *now*.

Leasing may also offer a tax ad-

new markets! new profits!

with "hand dressed"

BRICK

by **PITCHMASTER**

Here is a machine that incorporates the skills of the craftsman with more production muscle than twenty men.

Reach NEW markets, NEW profits by offering a NEW brick with greater depth of beauty.

- Culled brick can be converted to premium priced material.
- Fifty lineal feet of "Hand-Dressed" brick per minute.
- Instant adjustment to material height and depth of pitch. No limitation on material length.
- All material is conveyed through machine in a continuous flow by belts and rollers. Machine maintenance is reduced to the absolute minimum.

No other comparable machine in the field today will match the productivity and dollar profit that PITCHMASTER affords to make it a common sense investment.

NEW AND REVOLUTIONARY IN DESIGN! TESTED AND PROVEN

Names of satisfied users furnished on request

$4000.00
F.O.B. FRANKFORT, INDIANA

E & R MFG. CO. INC.
FRANKFORT, INDIANA

Circle Service No. 34

vantage that can be of particular importance to companies which find that their equipment tends to become obsolete much more quickly than government depreciation tables permit. For example, a company using equipment that experience shows it can expect to have to replace in seven years, may find that depreciation tables permit depreciation only over 15 years. By leasing this equipment for a seven-year period, this company would be able to deduct the full cost of the equipment from taxable income in seven years. If the company had purchased the equipment, it would only have used seven years worth of depreciation and would have to forego further depreciation benefits, if it wished to replace the equipment at the end of seven years.

In certain sale-leaseback situations also, tax advantages may accrue, since the sale of an asset normally involves taxation at the capital gains rate, if a profit is made, rather than at the corporate rate.

17. How can I tell if my company should lease or buy?

There is no method of financing that fits every situation equally. Factors to be judged include the availability of working capital, the rate of profit the company earns on its working capital, the effect of leasing on the company's cash flow as compared with other financing methods, the company's competitive situation, and whether there are any tax advantages in the company's special situation.

Service . . .
(*Continued from page* 46)

ing schedule in the tunnel kilns is 24 hours. Both kilns are housed in a 40-foot by 600-foot Tinker building.

Propane Stand-by System

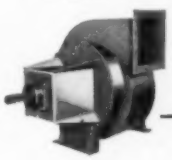
A stand-by system for using propane has been provided for use when the supply of natural gas is interrupted because of extreme weather conditions. Propane is also used as a standby fuel on the periodic kilns. There is no particular extra equipment required and a gas interruption makes the very minimum of confusion. It also enables the plant op-

Of course, not every industrial process requires fans that will operate in temperatures up to 2000° F. But when they do . . .

. . . *no job is too hot to handle for a Thermal-Aire Fan!* High temperatures, corrosive atmospheres, dust-laden or gaseous environments . . . whatever the condition, you can rely on Thermal-Aire Fans for smooth, dependable performance because . . .

. . . *every Thermal-Aire component is designed for the job!* A good example is Garden City's exclusive Air-Cooled Shaft. Without water cooling, heat slingers or other cooling systems, this unit disperses heat quickly, efficiently. Keeps bearings cool. Prolongs fan life. The Air-Cooled Shaft is typical of the engineering skill and manufacturing quality built into Garden City Fans for more than 80 years.

For a smooth operator on *your* hot jobs, be sure you specify Thermal-Aire Fans! Write today for Bulletin 960. *Garden City Fan & Blower Co., 801 North Eighth Street, Niles, Michigan.*



Thermal-aire Fans®

Circle Service No. 35

erators to make a fast change-back to natural gas when it becomes available after the interruption.

An air curtain, obtained by low pressure fans blowing through the kiln at each end, keeps each end of the kiln separated from external influences and helps keep the heat in the tunnel kiln properly proportioned. The kiln itself is equipped with 14 preheat burners on each side and 24 furnace burners on each side of the furnace, 16 on the bottom tier and 8 on the top tier. The burners themselves are also of Tinker design and are equipped with magnesium-aluminum tips. The furnace uses a recuperative system of burning, in that there is a flue from each top burner leading to the two lower burners immediately underneath it. Any heat lost from the crown, including unburned combustion gases, is reintroduced into the bottom burner ports and reused. A 10% savings in fuel has resulted from the use of this system.

There are four controlled sections on the furnace of the kiln, all of which are controlled by one thermocouple. Solenoid high-low valves regulate the amount of combustion products entering the furnace on all four zones of the kiln and the air-gas ratio is maintained at a constant all the time. Adjustments in this ratio are manually regulated.

Production Capacity

With 375 pieces of 4-inch tile per car, each kiln is capable of producing 54 tons of tile per 24-hour day. With 234 pieces of 5-inch tile, each kiln produces 45 tons per day. The tunnel kilns are used exclusively for production on the 4-inch, 5-inch and 6-inch tile while the periodic kilns are used for the 8, 10 and 12-inch tile. Eventually it is hoped that all the production will be run through the tunnel kilns. Present production rates of 130 tons per day include 90 tons on 5" and 108 on 4" through the tunnel kilns and the remainder through the periodics.

Just as in the setting operation, the unloading operation goes on 24 hours per day, seven days a week. All shipments are made on the nine company owned trucks, of which two are equipped for palletized loads. A Superlite unloader is used on one of these trucks and an Iowa boom-type unloader is used on the other. Seven extra trailers are also operated, so that when the trucks are out on delivery, these trailers can be loaded and ready to move as soon as the driver gets back from a job. By loading 24 hours per day, all trucks are ready to roll in the morning and are on the customer's job site first thing.

24 Tons on Trailer

One of the largest trailers, which the company has just purchased, is capable of shipping 24 tons (or 7400 feet of 4-inch tile) at one time. Compared to 8000 feet on a rail car, which is the usual loading, this is quite a feat in delivery techniques.

Another service which the company offers its customers is the stringing out of tile on the customer's land. Specially designed unloaders enable the truck driver to do this, thus saving the customer additional time and expense in handling.

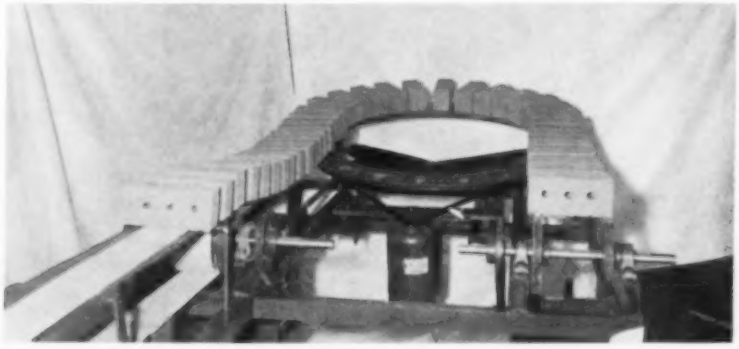
Grover Galvin is executive vice-president of the Rockford Brick & Tile Co., and is ably assisted by Edwin Finney, plant superintendent. Carl Clancy is sales manager of the firm.

The Ultimate in Conveyor Flexibility

The CIRCLE-VEYOR

A Product of PELM's Personalized Engineering

With the new CIRCLE-VEYOR, brick can be conveyed in any direction and around as many turns as necessary—handles green or burnt ware, at speeds to match the highest production rates, without chipping or damaging the brick. Brick never touch each other.



Circle-Veyor Is Designed To Solve These Production Problems:

- Extending off-bearing line for glazing and texturing.
- Adding Space for drying brick before it is set.
- Extending present setting systems into new areas of the plant.
- Revamping present production areas without the expense of moving large machinery.
- Handling finished brick from tunnel kiln cars to packaging and storage areas.

Our job is to solve your problems. Write us the details today.
MATERIAL HANDLING • PLANT LAYOUTS • TUNNEL KILNS • GLAZING

PELM RESEARCH & DEVELOPMENT CORPORATION

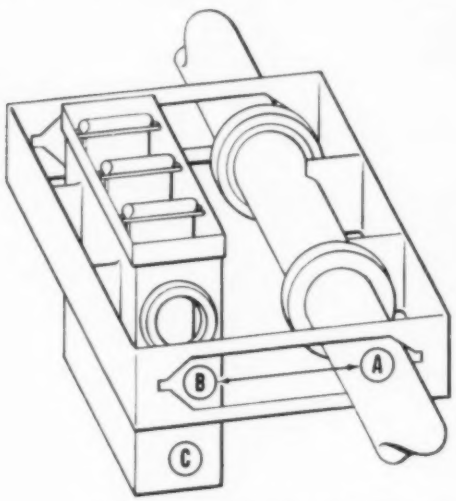
46 City Terrace • Newburgh, New York • Phone: JO 1-0010

Circle Service No. 36

"Baffle Box" Resists Wear, Needs No Switch in Air Conveyor System

A simple baffle box receiver is designed to eliminate the need for costly pipe line switches in pneumatic materials handling pipe lines installed by National Air Conveyor Corp., Chicago, Ill.

The diversification valve, as it is called, is arranged to receive material from either direction while in the "thru" position (A). In the "delivery" position (B), material is diverted to hoppers, bins, chutes, etc., via a baffle box. The baffle box (C) incorporates three reversible rubber baffles which serve to: (1) Deflect flow of material to bin or hopper; (2) Protect metal surfaces of diversion chute against direct impact and abrasive effect of high velocity material.



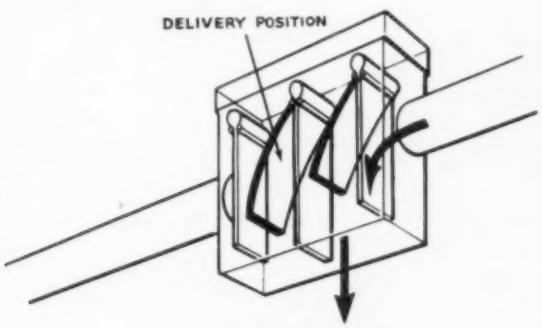
DIVERSION VALVE

These advantages of the new diversification valve are cited by the manufacturer:

Low Maintenance—Baffles pull out for reversing or replacement, are inexpensive and expandable.

Economy, Utility—Diversion valve replaces the need for costly pipe line switches at diversion points along the pipe line.

The new diversification valve is described in a bulletin on *National Air Conveyor Systems* available from the National Engineering Co., 549 W. Washington Blvd., Chicago 6, Ill.



BAFFLE BOX

NOW . . . you need only <u>one</u> Barium Carbonate for:

DRY FEEDING • WET FEEDING • GLAZES

High purity . . . free flowing

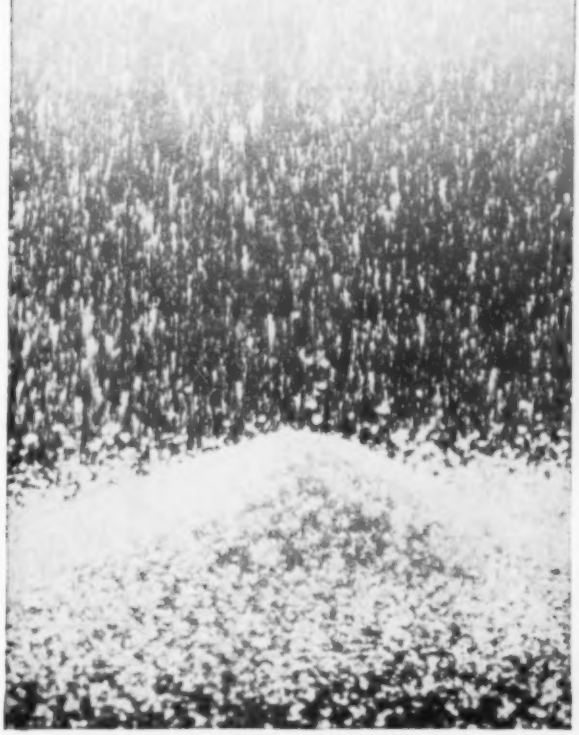
Columbia-Southern NEW CERAMIX BT

IDEAL FOR MECHANICAL FEEDING—Uniformity and easy flow of New CERAMIX BT Barium Carbonate permits you to get a constant rate of barium addition without frequent adjustments in feeder settings.

PROVED IN THE FIELD—New CERAMIX BT Barium Carbonate has been in commercial production use in brick and clay product plants for several months now. All users are enthusiastic about its performance with all types of clays and shales, running in a wide variety of feeding equipment. Regular truckload and carload shipments of this improved Barium Carbonate are now being made. Best of all, high-purity, free-flowing New CERAMIX BT comes to you at *no premium in price.*

Next time you order Barium Carbonate for use in eliminating dry house scum in burned clay products, specify New CERAMIX BT from PPG Chemical Division. Give your operation 98-99% purity in the easiest handling form. Product information and samples of New CERAMIX BT are available from our district office nearest you.

columbia | southern chemicals
CHEMICAL DIVISION
PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER PITTSBURGH 22, PENNSYLVANIA
DISTRICT OFFICES: Boston · Charlotte · Chicago · Cincinnati · Cleveland Dallas · Houston · Minneapolis · New Orleans · New York · Philadelphia Pittsburgh · San Francisco · St. Louis · IN CANADA: Standard Chemical Limited



Circle Service No. 37

MECO

engineered conveyors

bulk pay-off

Meco belt conveyors are for hard-to-handle bulk materials in busy plants —clay, aggregate, sand, stone, coal, ore and for "night-mare" products like urea, agricultural chemicals and caustics. MECO provides a single conveyor component or a completely engineered bulk handling system—in short order.

The profitable part of a MECO conveyor is in its conservative, heavy-duty design, the fact that it is planned for your specific application, and delivered **when you need it.** Because the design has been deliberately refined and simplified, maintenance is infrequent and easy. To find out more about a "job-fitted" conveyor or system, please write The Manufacturers Equipment Company, 218 Madeira Ave., Dayton 4, O., for Bulletin BC-1.

MECO

ENGINEERED CLAYWORKING AND HANDLING EQUIPMENT

Circle Service No. 38

Clay Pipe . . .

(Continued from page 43)

plant. Three of the dryers will take the production from both the forming machines, while the fourth will be used for drying of branches and other fittings. Each of the dryers is four tracks wide and each track will hold 20 of the racks of green pipe. With four dryers holding 80 racks, the total drying capacity of the dryers is 320 racks. Twenty pieces of 8" pipe are put on one of these racks.

A centrally located heat source, in this case natural gas, is located on each of the dryers so that the temperature in dryers progresses from approximately 115° F in the charging end to 195° in the discharge end. Each unit has eight fans recirculating air through the sidewalls of the dryer on the horizontally racked pipe.

With this dryer it is possible to get the water content of the smaller pipe from 16% to less than 3% in a matter of only 8 hours.

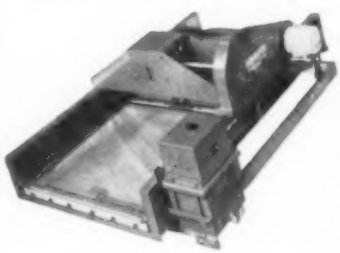
Each of the tracks is equipped with a hydraulic pusher for pushing the racks through the dryer. These pushers are tied in electrically to the doors at the discharge end of the dryer so that they cannot operate when a rack is ready to be discharged unless the discharge doors are open. The push through the dryer is on an intermittent push rather than a continuous-type push.

Racks of dry pipe are taken from the dryer and transferred by fork lift trucks to another specially designed Pearne & Lacy rack unloader. This unloader removes the horizontally set pipe in the dryer rack and automatically sets them vertically on a short conveyor belt leading over the deck of the kiln car. This conveyor belt is driven by a small hydraulic motor.

Set on Kiln Car

The now vertically setting pipe are then removed from this stub conveyor by air hoists equipped with conventional pipe fingers and set individually on the setting ring on the kiln car. Between the setting ring of the pipe and the pipe proper, a paper disc conforming to the diameter of the pipe is put, which eliminates the problem of sticking pipe to the rings. U-shaped clips hold the pipe in place during the burning operation. These

Heated Screen! Yes! Differential Vibration! Yes! Flexible Connectors! No!!



Only the Leahy® screen with FlexElex® heating gives you *all* of these qualities.

Easily leading the field in the screening of clays and shales, this phenomenal screen is breaking all records for (a) quality of screened products, (b) economy of operation and (c) freedom from service troubles.

THE Leahy NO-BLIND VIBRATING SCREEN

— offers —

INTEGRATED HEAT SCREENING

The Leahy screen invites any comparison. Send for performance data, references and complete information. Ask for Bulletin 16-EH.

THE DEISTER CONCENTRATOR CO., INC.

The Original Deister Co., Est., 1906

913 GLASGOW AVENUE FORT WAYNE, INDIANA

Circle Service No. 39

ceramic U-clips are reused time and time again.

One interesting point that should be noted here is that kiln trackage and all other kiln car trackage are located four feet below the level of the rest of the plant floor. This feature then makes the deck of the kiln car the same height as that of the plant floor, so never during the loading or unloading operations is extensive lifting or lowering required.

The dryers and car-loading station are located in a 120′ wide and 700′ long Varco steel building. All of the buildings at the installation are windowless, with adjustable louvres taking the place of windows. Plastic roofing material at strategic locations in the plant provides sufficient lighting along with the fluorescent lights installed throughout the entire plant. The walls of the building are also brickwork for the first 5½ feet in height with Transite corrugated siding used to cover the rest.

The train of kiln cars, now fully set with dry pipe on the setting tracks, is moved with a cable and winch system using hydraulic motors to prevent any sudden movement of the pipe which might result in tippage and spillage of the ware. The cars are moved at approximately six feet per minute by the winch onto a Star Foundry Co., hydraulically operated transfer car.

Preheater and Tunnel Kiln

The 10-ft. 6-in. wide by 10-ft. 8-in. long kiln cars are charged into a 163-ft. preheater which is in line with the 465-ft. Dressler tunnel kiln. This preheater holds 15 kiln cars and is heated with waste heat from the tunnel kiln. 15 propeller type fans located on the roof of the preheater recirculate this heat in a vertical pattern to raise the temperature of the pipe to 300° F at the discharge end. Movement of the cars through the preheater is accomplished with a Star Foundry Co., hydraulic pusher. This preheater is connected to the tunnel kiln by a vestibule so that as the cars leave the preheater bone dry (0% moisture) at 300° F, they enter the kiln with no consequent loss in temperature. The entire changeover from preheat to kiln is operated with interlocking doors so that the drafts inside both units are not altered at any time during this period. The hydraulic pusher for the kiln is located in the vestibule connecting the preheater and kiln.

The 465-ft. Dressler kiln, holding 42 active cars, is equipped with a 165-ft. preheat section. In this preheat section are eight propeller-type fans arranged in two staggered rows of four creating the necessary vertical recirculation for uniform heating of the pipe. There are also 42 North American gas burners of the excess air type located in this section. No dual-fuel system was installed because of the year-round availability of natural gas in the Ocala area.

The furnace section of the tunnel kiln is 105 ft. long and is equipped with 56 North American gas burners. A peak temperature of 1850° to 1875° is acquired in the salting area of this section. The four control zones of the furnace are controlled by Leeds & Northrup instruments in an air conditioned control room located next to the kiln.

The brine solution of salt for glazing purposes, which is 85% saturated, is introduced into the kiln automatically for three minutes at intervals of 15 minutes. An additional one

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Circle Service No. 40

minute is then taken to wash the brine line with clear water to prevent clogging of this line. In the "Brine Glaze" system which has been patented by Swindell Dressler the salt brine is completely atomized before injection into the kiln. The atomized brine is mixed with the hot flame of the burner which causes it to be ionized and evaporated instantly. The steam which is generated in this process creates a uniform glaze over the entire surface area of the pipe. The length of time these salt vapors are in the kiln is automatically controlled by pressure-controlled dampers coordinated with the brine-cycling mechanism. These close at the beginning of the salting operation and open at the end of the salting period.

At the time these pressure-controlled dampers are actuated, the fuel consumption in the salting portion of the kiln is automatically raised to compensate for the heat loss caused by the salt brine; compressed air is fed to the brine atomizer and the brine solution is then admitted to the kiln. The salt vapors are exhausted through a separate exhaust sytsem located at the entrance end of the furnace zone.

The cooling zone of this kiln is 195 feet long and is equipped with two sets of Ray-O-Tube instruments to sense the surface temperature of the ware passing through the cooling zone and to make automatically necessary adjustments as they may be required. Recirculation in all parts of the kiln, including the cooling zone, is provided by Robinson Ventilating Co., fans.

The kiln was designed for a production of 100 tons per 24-hour day or an annual production of 36,000 tons of pipe annually. It is located in a 100-ft. wide by 700-ft. long Varco building.

After the finished pipe have been discharged from the kiln they are transferred by another transfer kiln car to the inspection and unloading area. Pipe are unloaded by airlifts developed by the pipe company.

The No. 1 pipe are sent to the jointing station where a Lanly oven is used to cure the Uniloc jointed pipe in the conventional method.

From the jointing station the pipe are banded with steel strapping and placed either in the loading or storage area. The company has just obtained two new White motor trucks and the trailers for these trucks have been equipped with "Jiffy-Lift" self-unloaders. Since all deliveries will be made by motor truck it is planned to utilize the vehicles at the company's Ft. Lauderdale outlet to augment the capacity of these two new trucks. Eventually, the entire Ft. Lauderdale jointing opertion will be moved to the Ocala site.

General offices of the United States Concrete Pipe Co., are located in Cleveland, Ohio. In addition to the Ocala plant, the company operates two clay pipe plants at Uhrichsville, Ohio, one plant at New Philadelphia, Ohio, and a plant at Palmyra, Ohio.

The appointment of Edwin L. Phillips as ceramic sales representative for the Southeastern States has been announced by Richard Phoenix, ceramic sales manager of Southern Clays, Inc., New York, N. Y.

Bernard H. Lippin, president of the Lynch Corp., Anderson, Ind. recently announced the acquisition of the Coblentz dry air systems from the Lovell Manufacturing Co. Robert C. Coblentz, inventor of the systems, has also joined the staff of the Lynch Corp.

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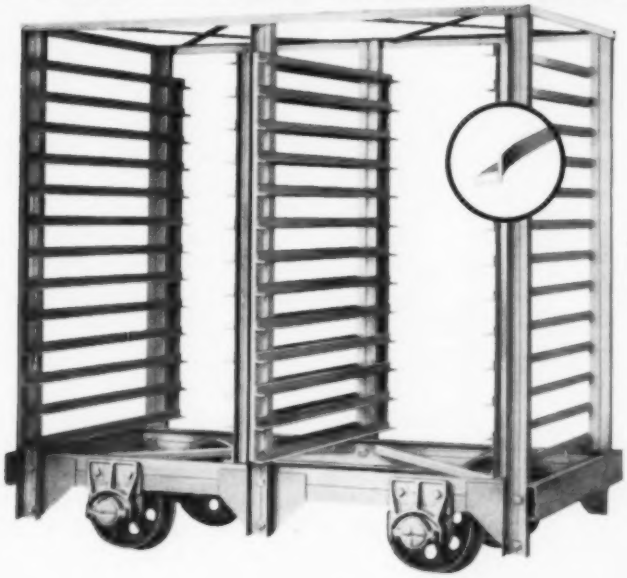

Rack car shown above was built to special specifications for Harbison-Walker Refractories Company. Construction is extra-heavy to handle refractory clays.

Sturdy Chase Rack Cars are built to withstand hard usage. They are suitable for soft brick, fire clay shapes and other palletized materials. Shelf angles can be flared (see inset) to receive pallets from an automatic loader. Number of shelves and shelf spacing can be adapted to your individual requirements.

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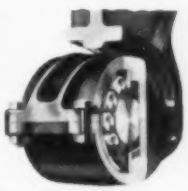

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- Full 6′ twin hydraulic cylinder feed for faster drilling and more pulling power.
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6 WIBAUTSTRAAT • AMSTERDAM, HOLLAND

Circle Service No. 44

Valentine . . .

(*Continued from page* 55)

and is unaffected by the abrasive dust and dirt which are unavoidable in an operation like that at Valentine Fire Brick.

It is difficult for the company to make direct cost comparisons between its present, highly automated system and the layout in the old plant, because many cost factors underwent major changes during the period in which the burned-out plant was cleared away and the new one was constructed. Nevertheless, it is apparent that batching and mixing is now done with a 2-man team, rather than with the five men previously required; batching speed has been stepped to a speed of one batch every three minutes for a standard, 3,000-lb. batch. Concurrently with this reduction in labor costs and step-up in production speed, the quality control has been greatly improved and the reliability of each batch mix has been ensured. The result is a more uniform product of higher quality, and the shortened process time has made more efficient use of production floor space and of storage space for finished bricks.

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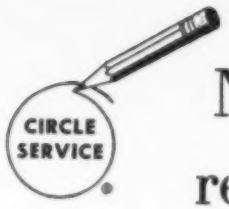

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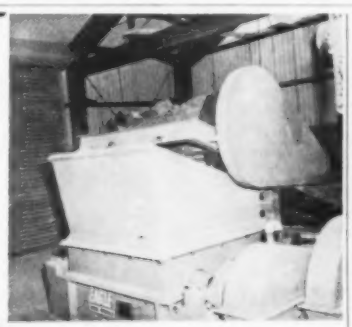
*See our Catalog in the 1960-1961 Ceramic Data Book

Another EAGLE Double-Roll Crusher for Universal Sewer Pipe Corp.



The highly efficient and productive new plant of Universal Sewer Pipe Corp., at Ocala, Fla., is making good use of an Eagle Senior Crusher set for 3" reduction. Both clay and shale are being crushed. The company's Uhrichsville, Ohio, plant also successfully uses an Eagle Senior Crusher. The Eagle has two rolls with interlacing hooked teeth—a slow turning roll grabs and feeds the lumps to the opposing fast turning slugger roll. Produces uniform shale product free from oversize slabs—combs keep crusher rolls open when processing moist clays. There's nothing else like it for dependable performance and economy. Send for Bulletin 925.

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Des Moines, Iowa

Please send free sample of your (.....) hand pad, (.....) glove, (.....) mitten for testing. (Specify which one you want).

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City .....

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WANTED: Ceramic engineer for quality control in Southern basic refractories plant located on the Gulf Coast. Minimum of three years experience in testing refractories. Knowledge of basic or other refractories production preferred. Refractories testing experience in steel or other refractories consuming industry acceptable. Please give complete details of education and experience in first letter. Write Box 7-BEZ care of Brick & Clay Record.

SALESMAN—For leading raw materials supplier. One who wants to sell and does not mind relocating. Extensive traveling. Engineering degree not essential. Salary, car, and expenses. Write Box 7-BEM care of Brick & Clay Record.

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WANTED: Small test kiln—approximately 1 cu. ft. with automatic temperature control. Reply Box 71, Rio Grande City, Texas.

WANTED: Mold boxes, top and bottom plunger, clutch assembly for Boyd Brick Press. Special 4 mold. Pat. 03. Reply Box 71, Rio Grande, Texas.

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FOR SALE—Steele 30 De-Airing Machine, including spare parts—excellent condition, $4500.00. West Coast Brick & Tile, Box 24634, Los Angeles 24, Calif.

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JUST LOCATED

1—7' x 120' rotary kiln, 2-tires, ½" shell.
2—7' x 110' rotary kilns, 2-tires, ⅝" shell.
2—6' x 60' rotary dryers, ⅜" shell.
1—10' x 8' x 125' kiln, 2-tires, ⅝" shell.
1—Raymond 50", 5-roller hi-side mill.

IN STOCK

1—Raymond 66", 6-roller hi-side mill.
1—Allis-Chalmers 5' x 5' ball mill, 75 HP.
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1—Farrel 24" x 13" jaw crusher, 50 HP.
1—Farrel 36" x 15" jaw crusher.
1—Vulcan 10' x 11' x 175' rotary kiln.
3—National 10' x 78' rotary dryers, ¾".
2—Hardinge 8'8" x 70' rotary dryers, ⅝".
1—Traylor 8' x 80' ratary dryer, ⅝".
2—Sterns-Roger 8' x 40', rotary dryers.
7—7'-6" x 62' rotary kiln, ½" shell.
1—6' x 7' x 100' rotary kiln, ⅞" shell.
1—Louisville 6' x 50' rot. steam tube dryer.
2—4'-9" x 32' rotary dryers, ⅜" shell.
1—Ruggles-Coles 5'-6" x 40' rotary dryer.
1—Standard 3' x 23' rotary dryer, ¼".

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P & H 1400 Diesel electric shovel 4 cu. yd. dipper, 32' boom with large amount of spare parts $48,500
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Marion, Model 4101 electric shovel. This machine in excellent condition. Complete overhaul 1958. 2½ cu. yd. dipper; 83' boom $22,500
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All listed equipment to be sold "As Is Where Is", subject to prior sale or disposition.

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Chicago phone: Bishop 2-2410

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250 Single Deck Cars
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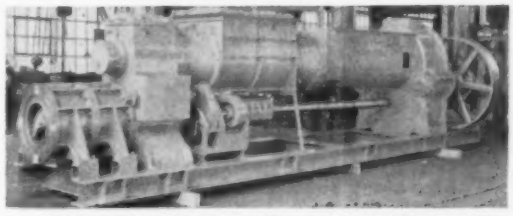

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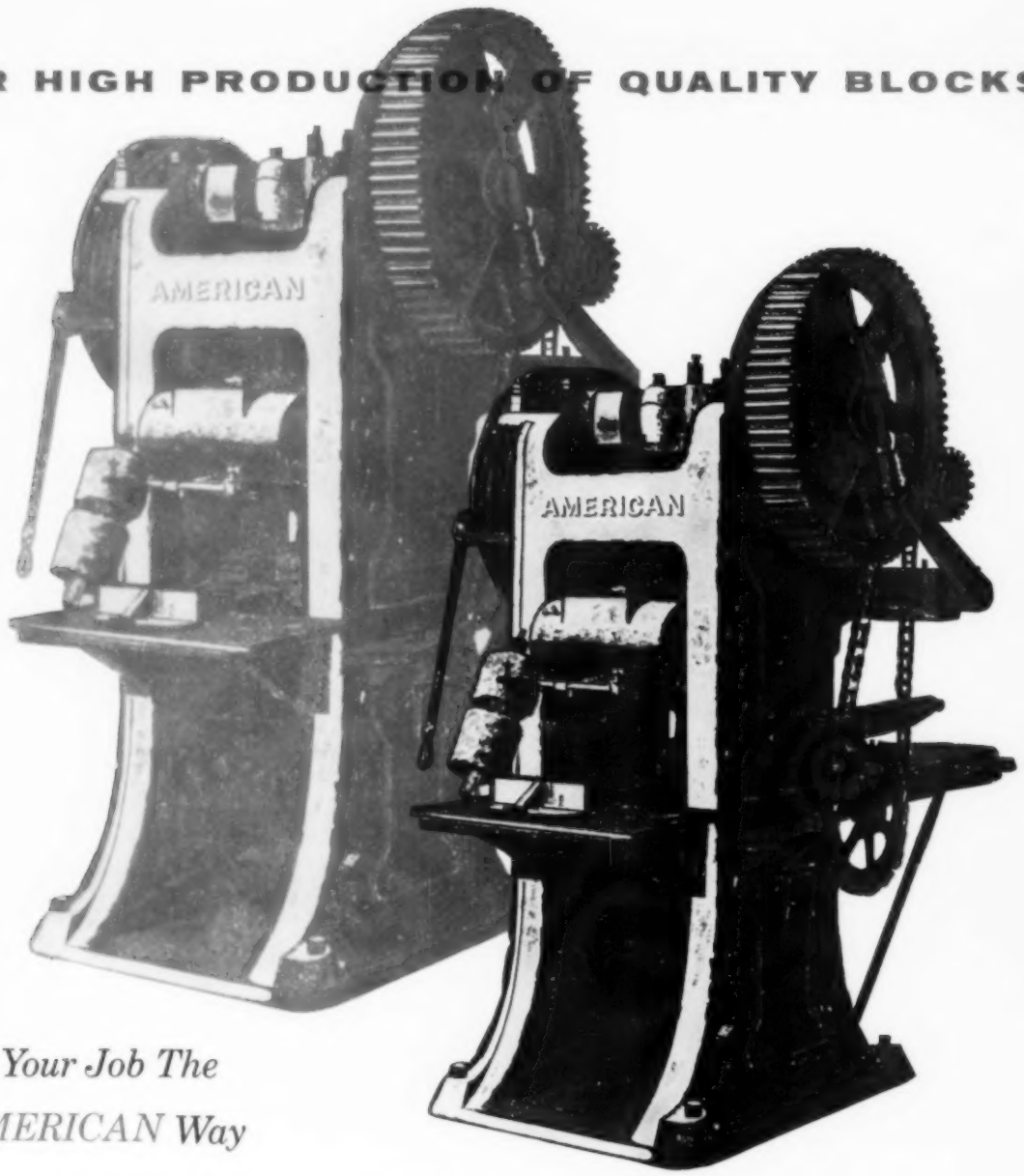

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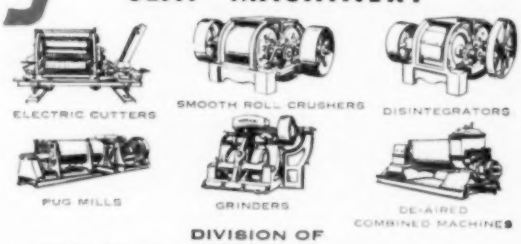

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